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GORGAS MEMORIAL LABORATORY

HEARINGS

BEFORE THE

COMMITTEE ON FOREIGN AFFAIRS
HOUSE OF REPRESENTATIVES

SEVENTIETH CONGRESS
FIRST SESSION

ON

H. R. 8128

TO AUTHORIZE A PERMANENT ANNUAL APPROPRIATION FOR THE MAINTENANCE AND OPERATION OF THE GORGAS MEMORIAL LABORATORY

JANUARY 20, 1928

STATEMENTS OF

Hon. MAURICE H. THATCHER, a Representative in Congress from the State of Kentucky.
Dr. FRANKLIN MARTIN, Chicago, Ill., president Gorgas Memorial Institute; director general and president elect, American College of Surgeons.
Mr. EDGAR WALLACE, legislative representative, American Federation of Labor (speaking for Mr. William Green, president American Federation of Labor).
Dr. BOWMAN C. CROWELL, Chicago, Ill., member of executive committee and director, Gorgas Memorial Institute; associate director, American College of Surgeons; recently director, Oswaldo Cruz Institute for Tropical Diseases, Rio de Janeiro.
Dr. GEORGE W. CRILE, Cleveland, Ohio, director Gorgas Memorial Institute; president Cleveland clinic; regent and ex-president American College of Surgeons.
HENRY S. WELLCOME, Esq., London, England, founder of the Wellcome Bureau of Scientific Research (including Tropical Medicine and Hygiene); the Wellcome Affiliated Research Institutions, the Historical Medical Museum, London; and the Wellcome Tropical Research Laboratories at Khartoum on the Nile, Anglo-Egyptian Sudan, Africa.
Surg. Gen. MERRITTE W. IRELAND, United States Army, Washington, D. C., director Gorgas Memorial Institute.
Surg. Gen. EDWARD R. STITT, United State Navy, Washington, D. C., director Gorgas Memorial Institute.
Surg. Gen. HUGH S. CUMMING, United States Public Health Service, Washington, D. C., director Gorgas Memorial Institute.
Dr. ARTHUR T. MCCORMACK, Louisville, Ky., president Kentucky State Board of Health.
Dr. HERMAN N. BUNDESEN, Chicago, Ill., recently commissioner of health of Chicago; president American Public Health Association; member of executive committee and director Gorgas Memorial Institute.

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HOUSE OF REPRESENTATIVES, UNITED STATES

SEVENTIETH CONGRESS, FIRST SESSION

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GORGAS MEMORIAL LABORATORY

HOUSE OF REPRESENTATIVES,
COMMITTEE ON FOREIGN AFFAIRS,
Friday, January 20, 1928.

The committee this day met, Hon. Henry W. Temple presiding.

Mr. TEMPLE. The committee will be in order. The meeting was called to consider H. R. 8128, a bill to authorize an appropriation for the Gorgas Memorial Laboratory, introduced by Mr. Thatcher, who will now make a statement to the committee.

[H. R. 8128, Seventieth Congress, first session]

A BILL To authorize a permanent annual appropriation for the maintenance and operation of the Gorgas Memorial Laboratory

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby authorized to be permanently appropriated for each year, out of any money in the Treasury not otherwise appropriated, the sum of $50,000, to be paid to the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated (hereinafter referred to as the Gorgas Memorial Institute), for the maintenance and operation by it, of a laboratory to be known as the Gorgas Memorial Laboratory, upon condition (1) that the necessary building or quarters for said laboratory shall be constructed within the five years next ensuing after this act shall become a law, either upon the site offered by the Republic of Panama therefor, at, or adjacent to, the city of Panama, or upon a site in the Canal Zone to be provided by the United States; (2) that each of the Latin-American Governments be invited and permitted to contribute annually, on a pro rata basis, according to population, toward the maintenance and operation of such laboratory, the total of such contributions not to exceed 75 per centum of the total contributed by the United States; and (3) that the United States be represented permanently on the board or council directing the administration of such laboratory, with privilege to the Latin-American Governments contributing as aforesaid to have representation on such board or council; all such representation to be based upon, and in proportion to, the actual respective contributions made to the aforesaid maintenance and operation.

SEC. 2. That pending the construction of the necessary building or quarters for said Gorgas Memorial Laboratory there is hereby authorized to be appropriated annually, in manner aforesaid, for a period not exceeding the five years hereinbefore named, said sum of $50,000, payable to the Gorgas Memorial Instutute, to enable and permit to be made the organization of the said Gorgas Memorial Laboratory, and its maintenance and operation, in temporary quarters or in any existing laboratory, in the Republic of Panama, or the Canal Zone.

SEC. 3. The Gorgas Memorial Institute shall make to Congress annually, on the first Monday in December, a full report of the operation and work of the Gorgas Memorial Laboratory for the fiscal year next preceding, and shall include therewith a complete statement of the receipts and expenditures of said laboratory for such fiscal year.

STATEMENT OF HON. M. H. THATCHER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF KENTUCKY

Mr. THATCHER. Mr. Chairman and members of the committee, I first wish to thank the committee for its kindness in fixing this date as the day of the hearing. It met the convenience of these distin-

guished physicians and scientific men who are holding conferences in this part of the country on public-health work, better than any other day. H. R. 8128, as you will note, authorizes a permanent annual appropriation of $50,000 a year for the work of the projected Gorgas Memorial Laboratory on the Isthmus of Panama.

I will give a brief outline of the facts involved, and then I shall call upon these other gentlemen here to speak to certain phases of this work. The Gorgas Memorial Institute of Tropical and Preventive Medicine (Inc.) is an American corporation created under the laws of the State of Delaware, having for its purpose the great work of education along sanitary and health lines, and especially the study of tropical diseases and methods of prevention. It has taken the name of the Gorgas Memorial Institute in honor of Gen. William Crawford Gorgas, as a tribute to the character and value of his work to all mankind; as a tribute to one who is generally conceded to be the greatest sanitarian the world has ever known. The site of his chief labors along sanitary lines was on the Isthmus of Panama where his work made possible the construction of the Panama Canal under conditions of health and sanitation that he rendered entirely normal.

It is believed that there ought to be established and maintained in the tropical region of Panama, a laboratory to carry on intensive research work in the study and mastery of the many tropical diseases, in addition to yellow fever and malaria. Not only would this work be of great protective value to the Panama Canal, in addition to the splendid work that has been done all along by the United States Government through the Canal Zone organization, but it would result in conquering other malignant diseases of the Tropics just as yellow fever has been conquered in the Western Hemisphere, and just as malaria has been greatly reduced in its malignant effects.

The work of General Gorgas in Cuba, first in yellow fever and malaria, and later in Panama, demonstrated the great and inestimable value of this kind of work. The present organization and equipment of the Canal Zone government hospitals are not sufficient for this research work. There are many malignant diseases in the Tropics yet to be studied, yet to be understood, and I suggest that it is of paramount importance that they be studied and understood and curbed; because with the greater agencies of transportation now being developed through the Panama Canal and otherwise, many of these diseases can be transmitted, not only to the Isthmus of Panama, but also to the temperate zones of the world. So the proposed work would constitute not only a protection to the canal and a benefit to the tropical regions of the earth, but also a protection to our own country against the influx of diseases which might become indigenous here. It is, therefore, very important that these research studies be carried on in a thorough high-class way.

The present facilities of the Canal Zone hospitals, I repeat, while adapted to the immediate hospital needs in the Canal Zone, are not sufficient for the carrying on of the great research work contemplated by this act. So it has been proposed by the founders of the Gorgas Memorial Institute, who have no purpose at all, except one of philanthropic consideration, that there shall be established on the Isthmus of Panama this research laboratory. The Republic of Panama has already donated the site for the proposed laboratory—a very valuable

one. I have seen the site and am perfectly familiar with its location. It was my honor, during several years of the construction period of the Panama Canal to serve as a member of the Isthmian Canal Commission and as head of the department of civil administration of the Canal Zone; and there I saw the splendid work of General Gorgas, and was able to assist him in certain features of it. As you doubtless know, from 1907 until the completion of the Canal in 1914, General Gorgas served as a member of the Isthmian Canal Commission, although his health and sanitary work began on the Isthmus in 1904, when he was sent there as Chief Sanitary Officer of the Canal Zone. In this connection I may say that the officials of the Panaman Government and the Panaman people, generally, cooperated with the Canal Zone authorities in the heartiest and most effective way touching sanitary requirements; and they gave the like cooperation in other matters affecting the construction of the Canal. For all this they have deserved the highest praise; and they are now showing the same spirit as regards the proposed Gorgas Memorial Laboratory.

Mr. EATON. Where is this site?

Mr. THATCHER. Just outside the city of Panama in the region of Bella Vista, on the sea shore. The site is of ample area, and has been donated by the Republic of Panama as a matter of civic enterprise, in commemoration of the great achievements of General Gorgas, and also because of the great value of the proposed work. In addition, the Republic, through its duly authorized representatives, has heretofore given the assurance that the Republic will build the laboratory at an estimated cost of from $500,000 to $750,000, and we are counting on that promise to materialize.

Mr. BLOOM. The laboratory without the equipment?

Mr. THATCHER. That is the building. Now, then, as our contribution, it is asked that we make, through congressional action, this authorization of $50,000 a year to carry on the work in this laboratory. These gentlemen will be able to tell you, Doctor Martin particularly, who is president of the Gorgas Memorial Institute, that assurances have been received from certain Latin American Governments that they will also contribute to the permanent maintenance of this work. Not only will the work serve a great humanitarian purpose in itself along the lines of prevention of disease and in the conquering of the malignant maladies of the Tropics, but also, I would submit, it will prove a very pleasing bond of contact between our country and the Latin American countries, and we need to cultivate all contacts of a proper character with our sister nations to the southward.

The provision which gives the option of making this location in the Canal Zone is put in the bill to meet any possible contingency that might arise if the Republic of Panama, for any reason, failed to carry out her agreement in regard to the building of the proposed laboratory, but the site has already been donated. Under the provisions of the bill, the United States Government will have the major representation touching the control of the laboratory. That has been thought to be just because of our paramount interest in the Panama Canal and in the Canal Zone, and because the Gorgas Memorial Institute has been organized in the United States; but other countries may come in and contribute a total of 75 per cent of the total contributed by the United States Government for the maintenance and operating expense of the laboratory; and the bill gives each contributing coun-

try representation in the administrative control of the work on a pro rata basis. Since, under the bill the United States will assume the major portion of such maintenance and operating expense, and as representation in the work will be based on contributions, that will leave the major representation in the United States, which is deemed just under the circumstances.

Mr. EATON. Has this site been actually ceded to the Gorgas Memorial and is it now their property?

Mr. THATCHER. I do not know whether conveyance has actually been made, or not. I know it has been set apart. Do you know, Doctor Martin?

Dr. FRANKLIN MARTIN. I can only say that the site was presented and the cornerstone laid for the memorial site marked by this stone. That was under the Porras administration.

Mr. THATCHER. I have seen the site. It has been pointed out to me, and I take it that the necessary papers have been executed, and, of course, the corner stone of this structure has been laid.

Mr. LINTHICUM. What do you mean by corner stone?

Mr. THATCHER. Corner stone of the laboratory building.

Mr. LINTHICUM. Is not a corner stone supposed to be put in when the foundation is built? Has that been done?

Mr. THATCHER. No.

Mr. COOPER. Generally speaking, there is no transfer of deed unless there is delivery and acceptance. Has there been any formal statement of Panama that it would give this and has the Government of the United States in any way accepted it?

Mr. THATCHER. The United States has not.

Mr. COOPER. Has the institute?

Mr. THATCHER. Doctor Martin can answer the question.

Doctor MARTIN. In 1924 this site of ground was presented by President Porras, of Panama; and at that time there was presented a plan of the laboratory building that was to be presented by the Panaman Republic as soon as funds were available for financing the personnel of the laboratory.

Mr. COOPER. What action, if any, did the institute take? Have they ever formally by vote or in any way, in writing, accepted the delivery of the deed?

Doctor MARTIN. No, sir.

Mr. COOPER. Have they ever taken any action looking toward acceptance?

Doctor MARTIN. Except that we were represented at the time of the presentation of the site by President Porras.

Mr. COOPER. As a matter of fact there is in this bill a possiblity of the abandonment of the site contemplated and the giving of a new site by the United States. Why, if there was anything tantamount to an acceptance of a deed or a title to that property, should there be that provision in this bill?

Mr. EATON. In other words, are you satisfied that the site is the best site available?

Doctor MARTIN. There is no better site than the one available, although there could be many sites in the Canal Zone.

Mr. BLOOM. In this bill it says upon the site offered by the Republic of Panama.

Mr. BURTON. The title is made conditional on the adoption of legislation proposed in this bill?

Mr. THATCHER. I so understand.

Mr. BURTON. They do not intend to transfer the property unless there is a provision made in the way of appropriating $50,000 for annual maintenance?

Mr. THATCHER. I think so. The site has been set apart for that purpose.

Mr. BLOOM. Then the idea of placing it adjacent to the city of Panama upon a site in the Canal Zone provided by the United States, does not apply?

Mr. THATCHER. If the Republic of Panama should not promptly carry out its agreement to make this donation of the site under this bill, we would be perfectly free to select a site somewhere else. We thought it might be wise to put that provision in the bill so there would be that leeway. We do not anticipate any trouble about it.

Mr. LINTHICUM. I do not see why it should be put in the Canal Zone or why it should be put in Panama at all?

Mr. BLOOM. Is there any objection to it?

Mr. THATCHER. If Panama is willing to give a site and to build a structure of the value of a half a million dollars or more, it is thought that it would be well to put the site there, immediately adjacent to the Canal Zone, just across the line.

Mr. BURTON. Under section 2 there is a provision for an annual appropriation of $50,000, pending the construction of the necessary building or quarters. Is this laboratory a going concern now?

Mr. THATCHER. No. sir. May I explain the meaning of that provision of the section? These gentlemen who will follow me will speak more in detail about that, but the idea has been that in order that this work may be organized and be ready to be housed in this building when it is constructed, it ought to begin as early as may be possible; and temporary quarters can be provided there at the Santo Tomas Hospital, which is in the Republic of Panama adjacent to this actual, proposed site, and not far from the Ancon Hospital. The work could be promptly organized and carried on there temporarily, and when the building contemplated shall be constructed, the work will fit right into the permanent quarters and go right on. That has been the idea of the promoters of this institute, that during the five years considered as being possibly necessary in which to construct this building and get it ready for occupancy, the work could begin and go ahead in temporary quarters which can be found either in the Republic of Panama, or the Canal Zone. If, at the end of five years, the building should not be available and no permanent arrangement should be made, the appropriation of $50,000 a year would cease, unless Congress should continue it by further action, or unless the situation should be met in some other way.

Mr. EATON. During the period of five years are the other South American Republics permitted to contribute or invited to contribute?

Mr. THATCHER. Under the same conditions, yes.

Mr. EATON. Is there an enthusiastic response to that suggestion?

Mr. THATCHER. Doctor Martin has talked to several presidents of Latin American Republics, and I will say from my own contacts with the Latin-American people, I believe that they will take a real

pride in cooperating in this highly meritorious enterprise which will mean so much to them. They know the concrete value of tropical sanitation; and if and when the Tropics are properly sanitated, they know, and we know that they become wholesome, habitable places in which the white and all other races can live. The time is coming somewhere in the future when this country will be filled to overflowing with population. We must seek outlets in the years to come, and the southward countries constitute the natural outlet. It must be an outlet characterized by adequate sanitation and our own people who wish ultimately to go to those countries should, of course, go not as adventurers or exploiters, but as bona fide citizens and home builders, and if conditions of sanitation there are what they should be, they will find in those great regions to the southward empires of potential and actual resources, which will become great commonwealths of development and prosperity of the Western Hemisphere. I think that this is worthy of consideration in this general connection.

The third section of the bill states that "The Gorgas Memorial Institute shall make to Congress annually, on the first Monday in December, a full report of the operation and work of the Gorgas Memorial Laboratory for the fiscal year next preceding, and shall include therewith a complete statement of the receipts and expenditures of said laboratory for such fiscal year."

Before I introduced the bill I had conferences with the Comptroller General's office. They first thought that language might be sufficient, but afterward, on further consideration, suggested that possibly a little amendment might better protect the United States in that respect. The Assistant Comptroller General suggested an amendment which we are willing to accept, and which, perhaps should go into the bill to give the fullest measure of protection to the United States in the expenditures of these funds. This amendment would go at the close of section 3 of the bill, as follows:

> The books and accounts of the Gorgas Memorial Laboratory shall at all times be open to examination of the Comptroller General of the United States, and it shall render the General Accounting Office such an account of its financial transactions as the Comptroller General may direct.

That would bring these expenditures in harmony with the general policy of other expenditures of our Government, and it is believed by the Comptroller General's office that it would give full protection in the expenditure of this money. Then justification would have to be made before the Committee on Appropriations as other justifications are made now.

That in brief is the outline of the bill and its purpose.

Mr. COOPER. Do you not think it is justification enough for the Committee on Appropriations if this committee reports in favor of authorizing an appropriation, and the House and Senate pass a law authorizing the expenditures. What do you think there should be besides that?

Mr. THATCHER. No justification beyond this, that the money was faithfully expended as authorized by law. Of course, the Appropriations Committee could not undertake to control the policy of this work. That must be left to the men in charge of it.

Mr. MOORE of Virginia. Now we have the Expenditures Committee that, if occasion requires, can look into the matter of expenditures.

Mr. THATCHER. Yes; these provisions would amply safeguard any question of proper expenditures. No appropriation has ever been asked of Congress for a memorial to General Gorgas in bronze or marble, but this would constitute a most fitting memorial, not only for his great work in Cuba and in Panama, but also for his splendid service to the Nation as Surgeon General of the United States Army, when under his control and direction, as you know, the best fitted Army, physically, mentally, and morally, ever assembled in the world, was brought together under our flag.

It is believed this would be the character of memorial he would have preferred above all others. It will serve its primary purpose of aiding in reducing to a minimum the malignant diseases of the Tropics and preventing their spread among the peoples of the earth; and at the same time it would also memorialize his great work for humanity; and it would especially commemorate his great work on the Isthmus of Panama, which made possible the construction of that great Isthmian enterprise which to-day is a profitable industrial proposition. As valuable as is the Panama Canal to our own country and to the world at large, I believe that the sanitary lessons learned there under the leadership of Gorgas will prove of far greater value.

Mr. MOORE of Virginia. Referring to the statement made a moment ago, I have found since I have been on this committee that the Republics of the South are very much inclined to cooperate with our Government in memorial projects and progressive enterprises. Recently we have had under consideration here a memorial to Columbus and one to Henry Clay.

Mr. O'CONNELL. And one to Bolivar.

Mr. MOORE of Virginia. They are participating in conferences to bring about the construction of these memorials.

Mr. THATCHER. I believe that they are inclined to respond more quickly than we are.

Mr. MOORE of Virginia. In matters of road building they have shown their cooperative spirit, and are manifesting a great deal of inclination to progress as rapidly as they can.

Mr. THATCHER. There is no question about it; and so far as my observation has gone in all these matters they have always shown a very quick and generous response to anything of this type which has a tendency to increase or to render more intimate the contacts between the countries.

There are present to-day a number of medical men and scientists, whom I shall now introduce. Among them is Dr. Franklin Martin, of Chicago, Ill., Director General and President of the American College of Surgeons, who is the president of the Gorgas Memorial Institute, and who as a member of the advisory council during the World War, rendered invaluable service to the nation for two years or more.

Dr. Bowman C. Crowell, also of Chicago, Ill., is a member of the executive committee and board of directors of the Gorgas Memorial Institute, associate director of the American College of Surgeons, and recently was director of the Oswaldo Cruz Institute, at Rio de Janeiro, Brazil. He was for seven years in the Philippines, dealing with tropical diseases, and has had years of experience in Brazil. He can tell you some of the types of diseases prevalent in tropical countries.

Dr. George W. Crile, of Cleveland, Ohio, another director of the Gorgas Memorial Institute, president of the Cleveland Clinic, and ex-president and regent of the American College of Surgeons.

Also, Mr. Henry S. Wellcome, founder of the Wellcome Bureau of Scientific Research, with its several affiliated research institutions and the Historical Medical Museum in London, England. Also, founder of the Wellcome Tropical Research Laboratories at Khartoum, Anglo-Egyptian Sudan. With his own means, Mr. Wellcome has established great institutions for the study and prevention of tropical diseases. He was born in the United States and was an American, but years ago went to England where he made his home, became a British subject and one of the world's greatest benefactors in the field of medical science and tropical research.

Surg. Gen. Merritte W. Ireland, of the United States Army, who is on the executive committee and board of directors of the Gorgas Memorial Institute, and one of the incorporators under the act of incorporation.

Admiral Edward R. Stitt, Surgeon General of the United States Navy, is also present, and Surg. Gen. Hugh S. Cumming, of the United States Public Health Service, is here. Both are incorporators.

Mr. Edgar Wallace is here representing Mr. William Green, president of the American Federation of Labor.

Also, we have with us Dr. Arthur T. McCormack, the head of the Kentucky State Board of Health. He was formerly chief health officer of the Canal Zone.

I do not see Admiral Cary T. Grayson here. Dr. Herman H. Bundesen, recently Health Commissioner of Chicago, and president of the American Public Health Association, is not present, but he has sent a telegram. Doctor Bundesen is a member of the executive committee and board of directors of the Gorgas Memorial Institute.

Mr. TEMPLE. Here is a telegram from Doctor Bundesen, addressed to the chairman, which reads as follows:

CHICAGO, ILL., *January 19, 1928.*

Hon. STEPHEN G. PORTER,
Chairman Committee on Foreign Affairs,
House of Representatives:

I had hoped to appear before your committee on behalf of the Thatcher bill (House bill), H. R. 8128. Unavoidable emergencies prevented me from going just as I was boarding train. I desire to recommend this bill to your committee for favorable consideration. The public health organizations are desirous of seeing such legislation enacted. I feel they will mean so much in connection with many national and international health problems. Dr. Franklin Martin knows my feelings on this matter.

HERMAN N. BUNDESEN, M. D.,
President American Public Health Association.

Mr. THATCHER. I will read the list of officers, directors, executive committee, and advisory council of the Gorgas Memorial Institute of Tropical and Preventive Medicine (Inc.), as follows:

Officers: Hon. Calvin Coolidge, honorary president, President of the United States; Franklin Martin, M. D., president, director general, American College of Surgeons; Gilbert Fitz-Patrick, M. D., vice president, American Society for Control of Cancer; George M. Reynolds, treasurer, chairman of the board, Continental and Commercial National Bank; W. J. Sennott, assistant treasurer, Continental and Commercial National Bank; W. H. G. Logan, D. D. S., M. D., secretary, secretary American Dental Association; Silas Strawn, attorney, Winston, Payne, Strawn & Shaw.

Executive Committee: Franklin Martin, M. D., chairman, director general American College of Surgeons; Herman Bundesen, M. D., President American

Health Association; Bowman C. Crowell, M. D., associate director American College of Surgeons; Hon. Charles G. Dawes, Vice President of the United States; Gilbert Fitz-Patrick, M. D., American Society for Control of Cancer; W. H. G. Logan, D. D. S., M. D., secretary American Dental Association; E. W. Ryerson, M. D., Children's Memorial Hospital; Charles H. Thorne, trustee Northwestern University.

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Hon. Calvin Coolidge, honorary president, Washington, President of the United States.

Dr. Franklin Martin, chairman, Chicago, director general, American College of Surgeons.

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Dr. A. W. Blain, Detroit, dean, Detroit Post Graduate School of Medicine.

Dr. Herman N. Bundesen, Chicago, commissioner of public health.

Dr. James T. Case, Battle Creek, Northwestern University Medical School.

Dr. Rodolpho Chiari, Panama, president Republic of Panama.

Dr. George W. Crile, F. R. C. S., Cleveland, Western Reserve University School of Medicine.

Dr. Bowman C. Crowell, Chicago, associate director, American College of Surgeons.

Dr. Hugh S. Cumming, Washington, Surgeon General United States Public Health Service.

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Dr. George E. de Schweinitz, Philadelphia, professor of ophthalmology, University of Pennsylvania.

Mr. Haley Fiske, New York City, president Metropolitan Life Insurance Co.

Dr. Gilbert Fitz-Patrick, Chicago, chairman Illinois Branch, American Society for Control of Cancer.

Hon. William Green, Washington, president American Federation of Labor.

Maj. Gen. Merritte W. Ireland, Washington, Surgeon General, United States Army.

Dr. Andrew S. Lobingier, Los Angeles, surgeon, Hospital of the Good Samaritan, Clara Barton Hospital.

Dr. W. H. G. Logan, D. D. S., Chicago, secretary American Dental Association.

Dr. Fred Bates Lund, Boston, surgeon in chief, Carney Hospital.

Dr. William J. Mayo, Rochester, Minn., Mayo Clinic.

Dr. Stuart McGuire, Richmond, surgeon in charge, St. Luke's Hospital.

Dr. C. Jeff Miller, New Orleans, Tulane University School of Medicine.

Judge John Bassett Moore, The Hague, Holland, Permanent Court of International Justice.

Brig. Gen. Robert E. Noble, Anniston, Ala., retired.

Mr. Adolph S. Ochs, New York City, managing editor, New York Times.

Mr. Lewis Pierson, New York City, president, United States Chamber of Commerce.

Hon. Belisario Porras, Panama, former president, Republic of Panama.

Mr. George M. Reynolds, Chicago, chairman of the board, Continental and Commercial National Bank.

Dr. Stewart Roberts, Atlanta, professor of Clinical Medicine; former president, Southern Medical Association.

Hon. Leo S. Rowe, Washington, director-general Pan American Union.

Dr. Edward W. Ryerson, Chicago, consulting surgeon, Children's Memorial Hospital.

Mr. Edward Elwell Spafford, New York, national commander, The American Legion.

Mrs. John Dickinson Sherman, Washington, national president, General Federation of Women's Clubs.

Dr. Ernst A. Sommer, Portland, University of Oregon Medical School.

Dr. Alfred Stengel, Philadelphia, former president, American College of Physicians.

Dr. George David Stewart, New York City, president, American College of Surgeons.

Rear Admiral Edward R. Stitt, M. D., Washington, surgeon-general, United States Navy.

Dr. George W. Swift, Seattle, surgeon, Children's Orthopedic and King County Hospitals.
Mr. Charles H. Thorne, Chicago, trustee, Northwestern University.
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Dr. Hugh Hampton Young, Baltimore, Johns Hopkins University Medical Department.

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Utah State Medical Association.
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Washington State Dental Association.
Washington State Medical Society.
Wisconsin State Dental Society.

Mr. THATCHER. I will also read what Mr. Coolidge wrote on this subject, as follows:

Human misery and the enormous economic loss caused by preventable illness are matters of serious moment to every individual. The Gorgas Memorial's plan to conserve this needless waste of human resources is commendatory and deserving of the support of all thinking people.

This institute is going on with health education in this country through funds raised by popular subscription, already spending $30,000 a year for educational work; but for intensive research work in the tropics it will be necessary to have help from the various governments which may be affected.

Mr. LINTHICUM. What work is being done by the Rockefeller Foundation?

Mr. THATCHER. We will have a statement about that to-day. The Rockefeller Foundation authorizes us to say it heartily commends this measure.

Mr. BLOOM. Will it be conflicting?

Mr. THATCHER. It will not. Doctor Martin will speak to that subject.

Mr. MOORE of Virginia. Mr. Thatcher, before you proceed, would it be inappropriate for me to read a letter of only a few lines from one of the directors of the institute, a very distinguished physician and surgeon, whose name is familiar to most of us here.

Mr. THATCHER. I will be delighted to have it.

Mr. MOORE of Virginia. The gentleman is Dr. Hugh H. Young, of Baltimore. His letter reads as follows:

JAMES BUCHANAN BRADY UROLOGICAL INSTITUTE,
Baltimore, Md., January 19, 1928.

Hon. R. WALTON MOORE,
Committee on Foreign Affairs,
House of Representatives, Washington, D. C.

DEAR MR. MOORE: I am considerably interested in H. R. 8128, which is to come before your committee on the Gorgas laboratory in Panama, and just want to let you know that I think it would be a mighty fine thing. It would certainly do valuable work in protecting us against tropical epidemics and in finding a means of preventing or curing such diseases which affect our people in the Philippines, Porto Rico and Panama. It would certainly be a very worthy and timely tribute to Dr. Gorgas, to whom we really owe the building of the Panama canal.

Very sincerely,

HUGH H. YOUNG, M. D.

Mr. THATCHER. That is a fine statement of the facts.

STATEMENT OF DR. FRANKLIN MARTIN, OF CHICAGO, ILL.

Doctor MARTIN. Mr. Chairman and members of the committee and ladies and gentlemen, before I speak on this subject, I would like to qualify somewhat as a witness, and to state that while I am president of the Gorgas Memorial Institute, and am its executive officer, I am merely president as one of you would be, and am not the director receiving any compensation.

I wish also to qualify by saying that I was associated with General Gorgas practically every day during the great war as a member of the advisory commission and chairman of the General Medical Board, and I was with the three surgeon generals, Army, Navy, and Public Health. That brought me in close touch and relation with General Gorgas, and like others who were associated with him I became very much attached to him and loved his personality as all of you did who happened to know him.

There are three outstanding things that Gorgas did and I would like to make a brief review of these in order that you may know why we have made this memorial what it is. First, as you know, he was one of the earliest to recognize the Walter Reed board's work in the discovery of the method of transmission of yellow fever. General Gorgas was chief executive officer and medical officer in Habana under General Wood. He recognized in this work of the Walter Reed board the real cause of the spread of yellow fever. He said to General Wood, "If that is the cause of yellow fever, and I believe it is, as I have worked with the board, if you will give me the authority to do what should be done, I will eliminate or attempt to eliminate yellow fever from Habana." General Wood characteristically said: "Go to it." That was in February, 1901. Yellow fever had been rampant in Habana and Cuba for 150 years. In September of that same year the work of General Gorgas had cleaned up Habana and the last case of yellow fever in Habana occurred epidemically in September of that year, and, as you know, it has been practically free from yellow fever since that time. When we got ready to build the Panama Canal, General Gorgas was summoned to care for sanitation there. Why? Because the Frenchmen who were sent over to dig the Panama Canal under the French régime all died of yellow fever and malaria. General Gorgas, as soon as he had been given authority at Panama, a much larger job than the other, used practically the same methods, and between March, 1905, and November, 1905, a period of approximately eight months, yellow fever was eliminated from Panama where it had been in existence 400 years. That made possible the building of the Panama Canal. Up to that time the commission sat in Washington instead of Panama because of their fear of yellow fever, or, at least, they sat in Washington.

This man had become a great sanitarian, recognized as a leader, and recognized for all time as one of the great sanitarians of the world. Then at the age of 60, as Surgeon General of the United States Army in the greatest war on record, this man, who was a sanitarian and a peace-loving man, set his genius to work in regard to the organizing of a great army; and, as you know, before the war ended, he had in his medical corps over 32,000 men. His corps was afterward taken over at his retirement by General Ireland. He had enlisted personnel, nurses, men, aids, etc., up to the number of nearly

200,000, one of the greatest corps under one major general, probably, that we had in any organization.

You would have thought this sanitarian would be willing to rest on his laurels, but he was not. He said, "We have all the men we can possibly ever use; let us get a fit Army, but to get a fit Army let us get away from the old-fashioned examination of recruits by which a superficial examination was made, and see to it that every man is examined by a board of experts, numbering five or seven, to include a dentist, oculist, aurist, pathologist, surgeon, and a medical man." This plan was taken by General Gorgas to the Secretary of War, and he said: "Mr. Secretary, I want to bring you a fit Army. I do not want you to have to fight with unfit boys. It will cost a great deal of money and a great organization, but let us have every man examined by an expert board. Let us have a board in every township in the United States." You know how General Crowder, of the Army, provided for that. The Secretary of War said immediately to General Gorgas, "I am for that," and devised every way he could to carry it out. That was carried out and the most astonishing thing, and it is a great lesson, was that we had to examine practically 7,000,000 men to get 4,500,000 fit men. The difference between the 7,000,000 approximately, and the 4,500,000 accepted men represented the large numbers who could not be accepted.

Many of them had incipient difficulties that could be adjusted, and we had a fit Army. I think General Ireland will tell you that the sickness in camps and overseas, not counting the hazards of war, was a very decided percentage lower than in the army of any one of our allies or of Germany or Austria, because undoubtedly of the fact that we had fit men to deal with. But the point is that more than one-third of the men of military age, young men, were found unfit. Now, General Gorgas said one day as we were waiting at a committee hearing, "Doctor Martin, I wish this horrible war was over." "Why, General?" "Well," he said, "my work is not yet finished." I said, "What would you do if the armistice was declared to-day?" He said: "I would call up New York and take a vessel to Guayaquil, Ecuador, where yellow fever is still in existence, and exterminate as far as possible yellow fever, and continue the work of eliminating tropical diseases; then go back to Panama, the garden spot of the world, and write an elegy on yellow fever."

One day after these boys were coming in, these fit boys, several millions of them, he said, "What an example this would be after this war if we could get not just boys of military age, but everybody in the United States, to have periodic health examinations every year." What a wonderful thing that would be for the prevention of disease. We know that 50 per cent of the men and women over 40 years of age will die within the next 15 years of preventable diseases—one-third of them from heart disease, preventable if we get them in their incipiency; one-third of them of kidney disease, preventable if you get them in their incipiency, or at the presickness stage; one-third of them from cancer, also preventable if the cancer is discovered early.

Now, when General Gorgas, after the war was over, immediately started to do exactly what he wanted to do, to clean up the Tropics, and died in London, his friends all over this country said, "Let us have a real memorial to General Gorgas"; and of all men in the

world that would not care a rap for a monument in a park, or of bronze or marble, it was General Gorgas. So every one of us said, "The only memorial to him that is suitable is one that finishes his work, and carries on for the people of the United States, what he so wonderfully advocated in selecting the boys."

This group that you see listed on the letterheads of the Gorgas Memorial Institute are his friends, the men who loved him; they are back of this movement. We have the movement divided into two parts; first, this great health movement in which we are trying to convince everybody in the United States of the difference between scientific medicine and medicine that is not scientific; to convince everybody in the United States that he and his family should have, at least, an examination once a year by a board of experts. That is one of the things that General Gorgas would advocate; and that is being done by the Gorgas Memorial Institute, which is being financed by friends of General Gorgas, to the extent, at present, of about $30,000 a year. How do we do that? First, by publishing in the daily press health columns written by 3,000 men in the United States who served under Gorgas, medical men who served under Gorgas and loved him; articles written by them on preventive medicine or scientific medicine, that is put into a shape that the man in the street may read and understand. We are reaching nearly 20,000,000 readers a year in that way.

We are having every night all over the United States in the great cities radio talks by the leading physicians; not men who are unknown, but leading physicians and specialists of the country. The same thing is being covered in the way of meetings, and in every legitimate way that is considered ethical; no bombast or beating of tom-toms, but we are extending this propaganda.

Mr. MOORE of Virginia. Will you tell us about this great man, where he was born and what preparation he had for this work?

Doctor MARTIN. If living he would now be 72 years of age. He was brought up in Richmond, Va., up to the time he was 9 years of age, when the Civil War ended, and he afterwards studied medicine. He always wanted to be a military man, but there was some opposition to it. He finally studied medicine, and after he graduated he still had a longing to be a military man, and went into the United States Army as a military officer in the Medical Corps. He had yellow fever himself, and, of course, he was an immune, and was intensely interested in the problem of sanitation. The following is a brief sketch of his life:

I. BIOGRAPHY

William Crawford Gorgas was born in Mobile, Ala., on October 3, 1854. He was the son of Gen. Josiah Gorgas, the chief of ordnance of the Southern Confederacy during the Civil War and later the president of the University of the South, at Sewanee, Tenn. His mother was Amelia (Gayle) Gorgas, daughter of Governor Gayle, of Alabama.

Gorgas was graduated from the University of the South with the degree of A. B. in 1875, and from Bellevue Hospital Medical College with the degree of M. D. in 1879. He entered the Medical Department of the United States Army on June 16, 1880, as first lieutenant, was advanced to captain in 1885, and to major in 1898.

In 1880, yellow fever was prevalent in Brownsville, Tex., in violent epidemic form. Conditions were bad beyond the power of words to portray to those who

have no recollection of conditions in a yellow fever stricken city prior to 1880. The Government, as well as the people at large, had been appealed to.

Gorgas, with the rank of lieutenant, was sent to Fort Brown, near Brownsville, to assist in the medical care of the civilian population. There he first met Miss Marie Cook Doughty, who was seriously ill of yellow fever, and there he also contracted the disease. He married Miss Doughty in Cincinnati on September 15, 1885.

Later, Gorgas was in active service in Florida, in the West, in the Dakotas, and in the old Indian Territory. He accompanied the military expedition against Santiago in 1898. Fate, possibly with a purpose, visited his system with yellow fever in early life, thereby making him immune to the disease. Because of his practical knowledge of yellow fever transmission, he was appointed chief sanitary officer of Habana, which post he occupied from 1898 to 1902.

It was in 1900 that Gorgas was in close contact with the investigation into the cause of yellow fever that was being conducted in Habana by the Walter Reed board. The memorable discovery made by this board revealed the cause of the disease; but it was Gorgas who applied these principles and effected the eradication of yellow fever from Habana.

In 1904 Gorgas was appointed chief sanitary officer of the Panama Canal Zone, and in 1907 he was made a member of the Isthmian Canal Commission. In recognitiion of his work in Habana, his rank was increased to that of colonel by a special act of Congress in 1903, and he became assistant surgeon general of the United States Army. In 1915 Gorgas and his associates on the Isthmian Canal Commission received a vote of thanks from Congress for distinguished service rendered in connection with the construction of the Panama Canal. This is one of the few instances in history where sanitary achievement has been recognized by the State, since Hippocrates was awarded a civic crown by the citizens of Athens for averting a pestilence from that city. This reflects much credit on our National Legislature as well as on Gorgas, for republics are usually unappreciative of the quiet conquests of science.

In 1913 General Gorgas went to Rhodesia, South Africa, at the invitation of the Chamber of Mines, Johannesburg, to advise as to the best means of preventing pneumonia and malaria among the native mine workers. He was appointed Surgeon General of the United States Army with the rank of brigadier general, on January 16, 1914, and was promoted to major general in 1915. He served with great distinction as Surgeon General during the trying period of our participation in the World War, until his retirement, at the age of 65, on October 4, 1918.

He never lost his interest in world sanitation. While he was stationed in the Canal Zone, he visited Guayaquil, Ecuador, and mapped out a plan for the control of yellow fever in that disease-ridden district. In 1916 he was made chief of the special Yellow Fever Commission of the Rockefeller Foundation, and spent several months in South America making surveys and laying plans for the eradication of yellow fever from localities in which it still prevailed.

After his retirement as Surgeon General he immediately accepted the assignment to direct the yellow-fever work which had been undertaken by the International Health Board of the Rockefeller Foundation. On May 7, 1920, he sailed for England, en route to West Africa, where he was to investigate the yellow-fever situation. He fell ill in London on May 30, 1920, and died on July 4, 1920.

II. THE GENIUS

To write of Gorgas is to attempt to write of the infinite—the subject is fascinating, but one's powers of analysis become exhausted in the face of its mystery and masterfulness. Gorgas was a genius whose life and chievements as they will be recorded in history are comparable with those of Lister and Edison. Each of these men, with a mind untrammeled and open, wrought miracles from the commonplace materials which were at hand, the real significance of which was not recognized either by his contemporaries or his predecessors.

Mr. O'CONNELL. He had yellow fever after he was a physician?

Doctor MARTIN. Yes. In 1924 I was in Panama. I had just been asked by the three Surgeons General and Doctor Rowe to become chairman of this organization. In Panama we laid the corner stone of the Gorgas Memorial. They learned we were coming and it was before a large concourse. The corner stone or marker was personally placed by President Porras, and as far as an executive of the

government could assure the giving of this site to the United States when it was ready to finance the personnel and the laboratory, we had every assurance this would be done.

Mr. O'Connell. When was the corner stone laid?

Doctor Martin. February, 1923.

Mr. Bloom. You used the words "marker or corner stone." Would it not be much better to continue to use the word "marker," because if you are going to erect this building, you will have an official ceremony for laying the corner stone? If you continue to use the word "corner stone," the impression will be that the building is already in course of erection and the corner stone laid.

Doctor Martin. The reason we called it the corner stone at the time, and that has been remedied, is the fact that they had a plan of a building they were ready to build at an expense of $500,000 to $750,000. So we called it at that time a corner stone, but it is really a marker.

Mr. Cooper. Does it contain the customary documents?

Doctor Martin. No, sir.

Mr. Linthicum. The Baltimore & Ohio Railroad called theirs the birthstone.

Doctor Martin. We designedly asked to have this on the Panama Republic territory because we are extremely anxious to get South American Republics interested in it. At that time and the next year I visited on two occasions South American Republics, and here again, while we did not get an authorization from their congresses, I discussed the subject of the Gorgas Memorial with the chief officials of Cuba, Peru, Chili, Argentina, Brazil, and Venezuela. They know more about Gorgas down there in those tropical countries than we do here. They love him more than we do; if possible. They say, "Do not talk to us about Gorgas; he is a Spaniard, his name is Spanish."

President Leguia, of Peru, very enthusiastically supported this idea and said, "Of course, our Government will give its pro rata sum." President Porras, of Panama, I have already spoken of. Last year I visited the present President of Panama, Doctor Chiari, and he definitely stated that they were for this proposition just as strongly was the previous administration. President Irigoyen, of the Argentine, and his successor, President Marcelo T. de Alvear, indorsed it; also President Baltasar Brum, of Uruguay, and President Serrata, of Uruguay. I visited the President and the president elect of Brazil, Pessoa and Bernardes; also President Gomez, of Venezuela, each of whom commended it; also Presidents Morales and Zayas, of Cuba.

Every one of these interviews with these presidents in Latin America was an interview that was inspiring to me because of the very definite statement that when it was brought to them in a proper way they would support the project.

Mr. O'Connell. Who fixed the percentage of these appropriations?

Mr. Thatcher. That was done when I drafted the bill, after conferring with the representatives of the officials of the Gorgas Memorial Institute.

Doctor Martin. Substantially this same bill was passed by the Senate last year in the short session but did not reach the House until four days before the 4th of March because of the filibuster in the Senate. It passed the Senate and was sent to the House, and we felt there was every reason from the response we received from

the Members of the House, that it would pass the House. The session was too short. We had a very sympathetic attitude toward this bill in the Senate, I am sure.

Mr. LINTHICUM. I think we ought to have this letter also of Doctor Young read in Doctor Martin's testimony. He served with General Gorgas in the World War.

Mr. TEMPLE. The letter referred to reads as follows:

JAMES BUCHANAN BRADY UROLOGICAL INSTITUTE,
Baltimore, Md., January 19, 1928.

COMMITTEE ON FOREIGN AFFAIRS,
House of Representatives, Washington, D. C.

GENTLEMEN: It gives me great pleasure to join Dr. Franklin Martin in presenting, for the consideration of your committee, the great value to the American people of having a laboratory for the study of treatment of tropical diseases organized in Panama adjacent to the Canal Zone. I have myself visited the spot at which it is proposed to place this monument to Gorgas, and approve of the plan in every way. Not only would it be of great value to us, but it would also be a fitting tribute to Doctor Gorgas, without whose scientific work the Panama Canal would not have been possible. The Nation owes Doctor Gorgas a debt of gratitude, and no more fitting way can be found than to erect this memorial laboratory in his honor.

Having studied the proposition with great interest, I unhesitatingly indorse it and hope that your committee will find it possible to approve it and push it through the Congress.

Very sincerely,

HUGH H. YOUNG

Mr. O'CONNELL. Doctor Martin may wish to include other statements in the record.

Mr. THATCHER. Mr. Chairman, Mr. Wallace, the representative of the American Federation of Labor has to meet another engagement and I am asking that he be now heard.

STATEMENT OF EDGAR WALLACE, LEGISLATIVE REPRESENTATIVE, AMERICAN FEDERATION OF LABOR

Mr. WALLACE. From the many benefits of the great work of General Gorgas, many of our people in the Canal Zone are to-day working under comparatively healthful conditions. Many of our people are engaged in pioneer work, building bridges, roads, highways through these tropical countries, and would be benefited by the extension of the work so splendidly developed by the genius of General Gorgas. We can think of no fitter memorial for this great man than that steps should be taken which in effect will demonstrate the appreciation of his countrymen and the people of other countries by continuing his work. We hope that this bill may be passed in the form in which it has been presented, and that the work will begin immediately for the benefit of the people now there, and for the people who are engaged in pioneer work and will be benefited by the extension of the Gorgas idea. That is all I have to say.

Mr. THATCHER. Doctor Martin, please briefly explain to the committee the purpose of initiating this laboratory work and getting it under way before the building is actually constructed to house it.

Doctor MARTIN. It would be almost impossible to go into a fully equipped laboratory or a large building and begin doing work in full measure without considerable preparation. We have facilities in the Panama Canal Zone, in the Ancon Laboratory, and in Santo Tomas Laboratory in Panama, and other places where this work

could be initiated. Already there has been purchased by the Panaman Government about $20,000 worth of the very best equipment for laboratory work. That is stored now in Panama.

We have a board of scientific directors tentatively selected, of which Dr. Richard P. Strong, director of the Harvard School of Tropical Medicine, is a representative; and Professor Strong would be willing to take up this work at almost any time. This preliminary work could be established and it would be an assurance to Panama that we were going to finance the personnel when they furnish the building.

Mr. LINTHICUM. You were about to mention some of the other diseases besides yellow fever.

Mr. TEMPLE. Doctor Crowell will discuss that.

Mr. MOORE of Virginia. I will ask a question on a point I am sure Congress will be interested in. You have had conferences with the authorities in the Republic of Panama. Were you impressed with the belief that there is no question that if this project is gotten under way the Republic of Panama will undertake the construction of the building?

Doctor MARTIN. To my mind, if this bill passes, I think there is practically no question but that it will be carried out. They simply said we can not do anything until we are assured it will be financed, which seems to me a very proper answer.

Mr. BLOOM. Would this work in any way duplicate the work of any of the other laboratories, such as the Rockefeller Foundation, or anything of that kind?

Doctor MARTIN. The next speaker, Doctor Crowell, will give you the absolute details of that, and also will speak for the Rockefeller Foundation. I will submit the following additional data:

SYMPATHETIC ATTITUDE OF LATIN-AMERICAN GOVERNMENTS

During the winters of 1921, 1923, and 1925, as acting president, I visited Habana, Panama, Peru, Chile, Argentina, Uruguay, Brazil, and Venezuela, and presented informally the plans of the Gorgas Memorial Institute of Tropical and Preventive Medicine to the Presidents of these Republics, and asked if their Governments would be interested in cooperating with the United States on a basis in proportion to their population. The answer of each of these executives indicated their great interest in the plan, their interest in the work of General Gorgas, and a belief that their Governments would cooperate financially on the suggested basis.

The Presidents interviewed were as follows:
February, 1921, President Belisario Porras, Panama.
March, 1925, President Dr. Rodolfo Chiari, Panama.
February, 1921, President Augusto B. Leguia, of Peru.
February, 1921, President Hipolito Irigoyen, Argentina.
March, 1923, President Marcelo T. de Alvear, Argentina.
March, 1921, President Baltasar Brum, Uruguay.
March, 1923, President Dr. Jose Serrato, Uruguay.
March, 1921, President Epitacio Pessoa, Brazil.
March, 1923, President Arturo da Silva Bernardes, Brazil.
February, 1923, President Gen. Juan Vincente Gomez, Venezuela.
March, 1925, President Gen. Gerardo Machado y Morales, Cuba.
March, 1923, President Dr. Alfredo Zayas, Cuba.

STATEMENT OF DR. BOWMAN C. CROWELL, CHICAGO, ILL.

Mr. TEMPLE. You might qualify as a witness if you wish.

Doctor CROWELL. I am a member of the executive committee and board of directors of the Gorgas Memorial Institute, and am associate director of the American College of Surgeons. I was recently director of the Oswaldo Cruz Institute at Rio de Janeiro, Brazil.

I have had an extensive experience in the study of tropical diseases. I am a pathologist and laboratory man and have been a teacher in the Tropics and in this country in my chosen profession, with a special interest in the pathology of tropical diseases, having worked in the Tropics for seven years in the Philippine Islands in the employ of the government of the Philippines and the university there as professor of pathology and bacteriology, as research man in the Bureau of Science, and as director of the school of tropical medicine and public health. I served four years at the Oswaldo Cruz Institute as chief of the department of pathology, at Rio de Janeiro, Brazil, a Government institute for medical research there, this institute having been erected by the Government as a tribute to Oswaldo Cruz who was their director of health, and the Gorgas of Brazil. He duplicated in Rio de Janeiro the work that General Gorgas had done in Cuba and in Panama, in cleaning up Rio entirely from yellow fever, and, to a very great extent, from malaria.

Mr. EATON. Did they erect this institute as a memorial?

Doctor CROWELL. Yes; and it bears his name.

Mr. O'CONNELL. It is operating now?

Doctor CROWELL. Yes; under the auspices of the Brazilian Government, and it is doing an excellent work in the investigation of tropical diseases and the control of diseases that exist in Brazil. From this institute have come reports of diseases which were discovered by the workers in that institute, especially the disease known as Chagas' disease, a disease caused by a small organism which gets into the blood and through the blood into the tissue, causing disease of all of the organs of the body, especially in the brains, causing various forms of mental disease, even imbecility, in the heart, causing chronic disability from heart disease; affecting not infrequently the thyroid gland in the neck, producing in some cases cretins; and it may affect any other organ of the body. The disability caused by it is very great. It is a good disease for me to mention at the present time because I devoted four years of my life to studying it.

Mr. COOPER. Has the germ been isolated?

Doctor CROWELL. Yes; it has been isolated. I was told not to use too many technical terms before a lay audience. It is the trypanosoma cruzi.

Mr. COOPER. If you have isolated it, then it is a preventable disease.

Doctor CROWELL. We know many things about its transmission. It is transmitted by a blood-sucking insect of considerable size which looks like a beetle, which comes out in the dark and bites exposed parts of the body, sucks blood, and injects this little organism which causes the disease. A satisfactory treatment for the disease is unknown at the present time. It has been under investigation for

some years now and we do know methods of prevention which are indicated by the habits of the bug itself, a blood-sucking insect which transmits the disease. This occurs principally in Minas Geraes, one of the Brazilian States, among the poorer population there where they live in huts and buildings which are no more than shacks in which there are many crevices in the walls. This beetle lives there in the dark in these crevices, and as long as it is daylight or as long as artificial light is on at night it stays in the dark crevices. After the extinction of the light it comes out and bites the first person it comes in contact with and will inject the organisms which cause this disease.

Mr. COOPER. It affects the Caucasians who live there?

Doctor CROWELL. Yes.

Mr. BURTON. Does this disease spread outside of Brazil?

Doctor CROWELL. There have been one or two cases found in the northern part of Brazil, and possibly one or two cases in Ecuador, and some, possibly, in Uruguay.

Mr. THATCHER. May it not also spread to other countries?

Doctor CROWELL. The point is that the transmitting agent has been found outside of Brazil, and there is no known reason why it may not spread to other countries. This organism belongs to the same general class of organism that causes African sleeping sickness; and in the early days of the study of African sleeping sickness those who studied it in restricted areas predicted that this disease would spread to certain other neighboring countries in Africa on account of the existence there of the transmitting agent, and later that prophecy was fulfilled.

However, this is not one of the most important of tropical diseases. In considering the tropical diseases just before coming into this room, I spoke to Admiral Stitt and told him I was to speak to the committee on what there was to be done yet in tropical diseases. In his characteristic way, he said the work has not begun yet. The first place in the diseases of the Tropics belongs to malaria. There has been a wonderful study made of malaria. We know the organism that causes malaria. We know the way in which malaria is transmitted, and we know how to cure and prevent it. It sounds as though the chapter were closed, but it is by no means closed. While we know some methods by which these things are accomplished, we have not arrived at the point where we have the best methods. There are several places in the circle at which it might be cut. We might cut it at one point and break the circle, but in all we have to deal with the human element.

Mr. MOORE of Virginia. Speaking of malaria, is it not true that the work in contemplation might be of very great value to this country as well as the countries to the south of us?

Doctor CROWELL. There are none of the tropical diseases that can be mentioned of which that is not true, and that is what I would like to impress particularly upon this committee—namely, that while we speak of the work on tropical diseases, which exist perhaps more profoundly in the Tropics than in our own country, or in the northern part of our country, yet this work is a matter of self-preservation for the United States, and it is a very cheap form of insurance for the United States to prevent the ingress of any of these diseases. While I am on that point I will make one other allied point, that the train-

ing that will be afforded to medical men in this country will enable them to recognize diseases which already exist in this country. As the result of the World War, and the widespread prevalence of disease in our men who were in the Army, diseases were imported into United States. There have been many reports in the United States of the existence of diseases which have been imported; large numbers of cases of disease which had never been known to exist in this country except in small number before the war. This increase is attributed to their prevalence during the World War; but there is a very great question as to whether or not a considerable percentage of the increase in the incidence of these diseases is not due to the fact that we now have men who were trained in the World War who can recognize these diseases. They recognize the increasing percentage in the United States at the present time.

Mr. Moore of Virginia. Conceivably, in dealing with malaria in tropical lands discoveries might be made that could be applied in dealing with malaria in this country?

Doctor Crowell. Exactly so.

Mr. Thatcher. And that has been the case.

Doctor Crowell. That has been the case at the present time and in the past history of the study of malaria, and there is no question but that this will be true in the future.

Mr. Thatcher. Indicate some of the other tropical diseases.

Doctor Crowell. Intestinal parasites find their most favorable surroundings in the Tropics. While almost all of the intestinal parasites may live in temperate climates, the favorite surroundings are the Tropics, and they cause a tremendous amount of morbidity and mortality. Perhaps this committee is more familiar with the hookworm disease that has been studied and so fully demonstrated by the Rockefeller Foundation that the knowledge of it has become popularized.

Mr. Bloom. Has the hookworm been practically eliminated down there?

Doctor Crowell. No, sir.

Mr. Bloom. In Porto Rico it has.

Doctor Crowell. Its incidence has been greatly reduced, but in order to keep the incidence of hookworm disease low there must be constant preventive measures taken to keep it down. It is not a disease of which one can say is wiped out any more than malaria. We can not stop preventive measures as far as we know at the present time. Perhaps we will find in the millennium measures that will keep it down.

The animal parasites vary from microscopic unicellular organisms such as the amoeba which causes dysentery and diseases of the liver and other organs, up to animals such as the tapeworm which may be several yards in length, or the echinococcus, which may be large enough to distend the abdomen. Then there are the spirochaetal diseases among which is yellow fever, and one known as dengue, relatively harmless, that causes a high morbidity, not fatal, but a study of this disease promises well for success of treatment. There are diseases such as sprue, another intestinal disease which affects the skin and nervous system, and pellagra, also yaws, allied to our own syphilis, if not a form of our own syphilis as it exists in the Tropics. In Peru there is a disease which so far is restricted to

certain canyons in Peru, the disease being called verruga peruviana, of which we know relatively little, but there is no reason why it may not spread. There are various nutritional and bacterial diseases also.

Mr. O'Connell. Does the Rockefeller Foundation make research studies there?

Doctor Crowell. The Rockefeller Foundation has confined its scientific studies largely to hookworm, malaria, and yellow fever. I had a conference with Doctor Vincent, president of the Rockefeller Foundation, within the past few weeks, and spoke to him of the work of the Gorgas Memorial Institute, and said to him, "It is very possible in the hearing before the committee the question will come up as to whether there is some conflict or duplication of work. I know there is none. I am familiar with the work of the Rockefeller Foundation, as I have worked under their auspices in the past, and I would like to have some statement to make to the committee." He said, "Doctor Crowell, you can say that the president of the Rockefeller Foundation is thoroughly in sympathy with the Gorgas Memorial Institute; that the Rockefeller Foundation will welcome this work as it is very much interested in any organization which can offer any possibility of progress in the control of tropical diseases." He implied that if any organization will give the Rockefeller organization some practical method of control of disease, that is what they wanted.

Mr. Thatcher. Leprosy is also indigenous to the Tropics, particularly the Isthmus, and will be studied by this Gorgas laboratory organization.

Doctor Crowell. Undoubtedly.

Mr. Thatcher. Many of these diseases that are indigenous to that section of Latin America are also indigenous to the Philippines and Hawaii.

Doctor Crowell. That is true.

Mr. Moore of Virginia. A scientific man would not think that because one organization was working on the same line that another organization should be excluded from that line. They work in cooperation and extend their investigations everywhere as far as possible.

Doctor Crowell. Exactly. There is just as much room in tropical medicine for investigators as there is room for aviators in the air above us.

Mr. Cooper. If there should be any marked increase in aerial travel those diseases would be brought here much more quickly than before?

Doctor Crowell. Exactly.

Mr. Thatcher. The possibility of increased disease enlarges through the multiplication of methods of transportation?

Doctor Crowell. Yes.

Mr. Thatcher. How much more time have we?

Mr. Temple. The House will meet in four seconds.

Mr. Burton. It is staggering to me the extent the hearing will assume. It is interesting and informing to the committee, but the members have a great deal of work and are extremely desirous that it be finished to-day.

(Thereupon, at 12 o'clock noon, the committee recessed until 1 o'clock p. m.)

AFTER RECESS

The committee reconvened, pursuant to the recess, at 1 o'clock p. m., Hon. Henry W. Temple, presiding.

STATEMENT OF DR. BOWMAN C. CROWELL—Resumed

Doctor CROWELL. There are a few things I would like to add to what I have already said concerning the importance of the carriers of diseases which exist in the Tropics. These carriers may not manifest the symptoms, and may be very difficult of detection, and by traveling outside of their own country they may carry the disease.

Mr. TEMPLE. You do not mean insect transmission to persons who may carry it?

Doctor CROWELL. In addition to human carriers there are also insect transmitter-carriers of diseases, which is a source that must be further studied.

With your permission I will mention some of the diseases that I have not spoken of in detail that merit further study, such as leishmaniasis, which exists to a very considerable extent in the South American continent and other areas.

Mr. BURTON. What is that?

Doctor CROWELL. It is a disease that causes not only changes in the viscera, but also extensive changes in the skin causing ulceration and sores of the skin caused by an organism that is already known and for which we have one form of treatment.

Mr. BURTON. That is a disease of long standing prevalent there, for many years, or has it developed recently?

Doctor CROWELL. That has been known for a great many years in India. Schistosomiasis, which exists in the South American continent and the West Indies, is a disease affecting especially the intestines and liver with great morbidity. It is a fatal disease. Pellagra, vernuga Peruviana, and dengue, and, without enumerating them, intestinal diseases, caused by animal parasites and bacteria. That is a supplemental list of diseases.

Mr. BURTON. To the lay mind what do you say is the distinction between bacteria and parasites?

Doctor CROWELL. The distinction is that bacteria are vegetables, while the animal parasites belong to the animal kingdom, undifferentiated organisms.

Mr. HULL. The diseases which you have enumerated are tropical diseases and diseases which may manifest themselves in temperate zones?

Doctor CROWELL. All of them may manifest themselves in temperate zones. I am emphasizing this phase that they may exist in temperate zones to emphasize that further investigation of these diseases is a method of self-preservation on the part of the people of the United States aside from its direct contribution to science.

Mr. HULL. Some of them have manifested themselves here?

Doctor CROWELL. Many of these diseases I have mentioned already exist in the United States.

Mr. THATCHER. Take yellow fever or leprosy.

Doctor CROWELL. Leprosy is in the United States. Yellow fever has been in the United States. I have not referred to bubonic plague which has been in the United States.

Mr. THATCHER. That is conveyed by the flea parasite?

Doctor CROWELL. Conveyed by the rat fleas.

Mr. THATCHER. And we have a very serious problem in the West on account of the ground squirrels.

Doctor CROWELL. Ground squirrels in California especially.

Mr. THATCHER. They are carriers.

Doctor CROWELL. Yes.

Mr. THATCHER. Will you state the institutions which have laboratories devoted to this character of work either here or abroad?

Doctor CROWELL. There are a number of schools of tropical medicine that have not permanent laboratories situated in the Tropics, the most favorable sites for the study of these diseases. Among these schools I will mention are the London School of Tropical Medicine in London, England, the Liverpool School of Tropical Medicine in Liverpool, England; the Hamburg Institute of Tropical Medicine at Hamburg, Germany, and the Oswaldo Cruz Institute at Rio de Janeiro; the Harvard University School of Tropical Medicine at Boston; the Columbia School of Tropical Medicine in Porto Rico; the Tulane School of Tropical Medicine in New Orleans; and some in France, the names of which I am not familiar with at the present time. There are the Wellcome Tropical Research Laboratories in Khartoum in the Anglo-Egyptian Sudan.

Of this list that I have read only three maintain permanent laboratories in the Tropics, the Oswaldo Cruz Institute in Brazil, the School of Tropical Medicine in Porto Rico, under the auspices of Columbia University, and then there are the Wellcome Laboratories at Khartoum, maintained by Mr. Wellcome, who is here to-day and who will give testimony before this committee.

In conclusion, Mr. Chairman and gentlemen, I will emphasize the favorable site that Panama offers for the study of all of these diseases. There is no place in the world probably that offers a more favorable site for the study of dieases contemplated by the Gorgas Memorial Institute of Tropical Medicine.

Mr. BURTON. The amount that would be provided if the United States appropriated $50,000 and the Latin-American countries not more than 75 per cent of that, $37,500, how would that be divided—what would be the different uses made of that money?

Doctor CROWELL. I think I had better refer that question to the president of the institute, who controls. It is my understanding that the appropriation asked for would be expended for equipment to equip the laboratory, for personnel to man the laboratory, and for such traveling as may be necessary for them in their work.

Mr. BURTON. This travel would be to near-by places or some distance?

Doctor CROWELL. Expeditions would go to places where it might be deemed best.

Mr. COOPER. You would supply the equipment and furnish the building?

Doctor CROWELL. Yes, sir. There has already been expended considerable money for purchase of material to the extent of $20,000 or $30,000.

Mr. BROWNE. How much do you estimate the maintenance of the laboratory will be?

Doctor CROWELL. The general maintenance of that will be largely covered by the appropriation contemplated.

Mr. BROWNE. You do not contemplate that the United States will make an annual appropriation for maintenance?

Mr. COOPER. $50,000 a year.

Doctor CROWELL. For a period of five years.

Mr. BROWNE. After five years.

Mr. THATCHER. It is expected that the appropriation shall be permanent, to be applied in that way in the five years initial period to organize and have the work ready, so that after the laboratory is constructed, the organization can be placed in the laboratory and the work can go on; but the appropriation will continue.

Mr. BROWNE. After the five years?

Mr. THATCHER. Yes.

Mr. TEMPLE. It is a permanent appropriation of $50,000 a year.

Mr. THATCHER. If a building is not provided for the laboratory in five years, under the terms of the bill no further appropriation will be made unless some further provision is made by Congress; in other words, at the end of five years the permanent quarters must be provided for in some way.

Mr. BURTON. As a practical matter I will say to you in consideration of this bill on the floor of the House that an appropriation before the building is completed will arouse as much criticism as anything in the bill. It will be said, "What is the object of appropriating $50,000 to begin before a building is constructed"; and you have partially stated it, as Doctor Martin has, and Doctor Crowell by giving reasons for that, and I should conjecture that objections would be raised on that point more than any other.

Mr. THATCHER. The question is whether these considerations are sufficient that have been given here, of the importance of organizing the work and getting it started; and the Republic of Panama has been waiting to see what Congress will do to erect this laboratory or to aid in manning it when the building is constructed.

Mr. EATON. Doctor Martin made a statement with reference to the five years, and whether it would be possible to utilize the new building at once.

Doctor CROWELL. Yes. I will ask permission to submit a memorandum I prepared covering in part the statement I have made.

Mr. TEMPLE. Without objection it will go into the record.

(The statement referred to is as follows:)

THE PROBLEMS OF TROPICAL DISEASES AND POSSIBILITY OF THEIR SPREAD—AUTHORIZED STATEMENT OF COMMENDATION BY THE ROCKEFELLER FOUNDATION

By BOWMAN C. CROWELL, M. D., Chicago, Ill., Member of Executive Committee and Board of Directors Gorgas Memorial Institute; Associate Director American College of Surgeons; Recently Director of the Oswaldo Cruz Institute, Rio de Janeiro, Brazil

In a discussion of diseases of the tropics, the most important place belongs to malaria. While methods for the control of malaria are known, the cost of pursuing these methods on such extensive scales as are necessary in the tropics, mitigate against their efficiency. Present methods, also, call for human cooperation, which it is not always possible to get when dealing with native tropical races. New methods for the treatment of malaria and its elimination from the globe are a very promising field for investigation. They already occupy the

attention of innumerable workers, and any addition to this force that it is possible to secure should certainly be encouraged.

There are a large number of cases of anemia in the tropics, some of which also exist in temperate climates. Many of these are associated with diseases of the spleen, concerning which very little is known.

Diseases due to animal parasites find their home in the tropics. These parasites, varying from unicellular organisms up to the larger worms, cause diseases of all of the organs of the body, principal among which are those which infest the intestines, producing untold disability. Among these diseases may be mentioned such as amoebic dysentery and hookworm disease; schistosomiasis; the long list of spirochaetal diseases, among which may be mentioned yaws, or framboesia tropica, a most disfiguring disease, bearing many points of similarity to syphilis, if indeed it be not a form of syphilis, as is believed by many; yellow fever comes within the list of spirochaetal diseases, and has a close analogy in dengue and breakbone fever. The cause of dengue is unknown, and but little is known concerning its method of transmission. Leprosy need only be mentioned on account of the general diffusion of knowledge concerning it. A trypanosoma exists in South and Central America, and causes an enormous morbidity and mortality. Transmitted by the triatoma megista, which has a wide-spread distribution on the South American continent, it is not at all impossible that the disease itself may spread to the North American continent. The relation of the parasite which causes it, to certain other parasites which are not known to cause disease, merits extensive investigation. Nutritional diseases and diseases due to bacteria exist in the tropics, some of them in much more intensive form than is true outside of the tropics; and methods for their control and the prevention of their spread are pressing problems.

A knowledge of the intermediate agents which transmit many diseases, notable among which are the mosquito and the ordinary house fly, is woefully deficient; and recognition of individuals who are the carriers of disease without themselves suffering from it, is a *sine qua non* for the protection of those with whom these individuals come into contact.

While reference here has been made to these diseases as Tropical diseases, the possibility of the transportation of many of them to our own shores is of pressing economic importance, and those who are conversant with methods of recognition of the diseases already known are more and more frequently recognizing cases of these diseases in our own country. This is a most potent reason for further study, and for a wider dissemination of the already existent knowledge concerning these diseases.

It is well within the bounds of possibility that a single finding in the laboratory in the Tropics may prove of such economic value to our Government, that it will, in one year, much more than repay the amount spent for such investigations over a very long period of years. This argument, then, is—from the standpoint of the North American—one of self-preservation in addition to being one of universal humanitarian import.

The diseases referred to above form only a very small fraction of the innumerable morbid conditions which demand present day investigation, and any possible addition to the number of organizations studying these diseases will take the form of a moral obligation.

I have personally discussed this subject with Dr. George E. Vincent, president of the Rockefeller Foundation, and he has authorized me to make the statement that the Rockefeller Foundation would cordially welcome into the field of tropical medicine an organization which gives promise of making additions to the knowledge of tropical diseases. The Rockefeller Foundation is interested in the elimination of disease from the Tropics and from temperate climates, and appreciates the limits of our present knowledge. The foundation stands ready to put into practical application such concrete measures as may give promise of success, which may be discovered by any workers.

Doctor Vincent also authorized me to state that there is no conflict in any way between the work contemplated under the auspices of the Gorgas Memorial Institute and that of the Rockefeller Foundation, and that he heartily indorses the inauguration of such work under the auspices of the Gorgas Memorial Institute.

It is planned that the Gorgas Memorial Institute of Tropical and Preventive Medicine will form a center for research at which will be welcomed students from all countries, and that it shall form a center for the dissemination of already existing knowledge and that which may result from its researches. The importance of this in the training of medical officers for our Army, Navy, and

Public Health Service, to say nothing of lay physicians, can not be estimated in dollars and cents.

Aside from the appropriateness of the selection of Panama as a site for a memorial to General Gorgas, there is no place in the world, which, geographically, offers a greater advantage for the study of diseases of all kinds.

STATEMENT OF HON. LISTER HILL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA

Mr. HILL. Mr. Chairman, an important meeting of the Military Affairs Committee of which I have the honor to be a member, makes it impossible for me to remain at this hearing. There are those here who will explain to the committee the bill and its purposes. I hope that the committee in its wisdom will see fit to report the bill favorably without delay. We have felt much pride in these latter days in Charles A. Lindbergh, America's ambassador of good will. William C. Gorgas was America's ambassador of mercy. He destroyed dread disease in his own land and in alien lands. He ministered to suffering humanity in all lands and made mankind his debtor for all time. He opened the door for the white man to the treasures of the Tropics, and with his genius and his skill made possible the Panama Canal. France has her Louis Pasteur, England has her Joseph Lister, but America has her William Crawford Gorgas. Patient and devoted man, servant of all peoples and of the most high God, let the American people, through their Government, build a fitting memorial to this great American—a memorial that will carry on his great and beneficent work.

Mr. THATCHER. I desire to call your attention to the presence here to-day of Mrs. Gorgas, and to give you a bit of very interesting history about General Gorgas and herself.

Mrs. Gorgas has had the unique distinction of once having had her grave prepared for her burial, but this was some time ago; and, very happily, she did not occupy it.

As a girl, Mrs. Gorgas, then Miss Doughty, of Cincinnati, was visiting friends at Fort Brown, at Brownsville, Tex. An epidemic of yellow fever broke out there and she was stricken. General Gorgas was a young officer in the United States Medical Corps and in service at a noninfected point several hundred miles northward of Fort Brown, when yellow fever thus broke out at Brownsville. Though nonimmune, with the courage and fine humanitarian spirit always so characteristic of him, he volunteered to go, and did go, to Brownsville to aid in caring for the sick and dying. Miss Doughty was one of those he attended. Her condition was so grave that all hope for her recovery was abandoned, her grave was dug, and General Gorgas had agreed to read for her the burial service. But, most fortunately, under his effective ministrations she recovered. Thereupon he was stricken with the same dread disease, but survived.

Under these tragic circumstances acquaintanceship between the young couple began, and this ripened into romance and marriage. Thenceforth, until the death of General Gorgas, they were devoted companions and effective coworkers in the greatest crusades against the malignant plagues of the Tropics the world has ever known. Both having become immune to yellow fever through having experienced it, they were able to serve without stint or peril in yellow-fever regions; and in numberless ways Mrs. Gorgas, herself endowed with fine tact

and courage, proved herself her distinguished husband's invaluable helpmate in his great undertakings. In the light of subsequent events their Brownsville experiences would seem to have been providential.

I wish to thank the committee for welcoming the presence of Mrs. Gorgas here to-day, and for your courtesy she is deeply appreciative.

STATEMENT OF DR. GEORGE W. CRILE, CLEVELAND, OHIO

Doctor CRILE. Nothing need be said by me concerning the work of General Gorgas.

Mr. TEMPLE. You are a director of the Gorgas Memorial Institute?

Doctor CRILE. I am one of them.

Mr. TEMPLE. You are also ex-president of the American College of Surgeons. For the record so that those who read it may know, you might qualify by stating your residence.

Doctor CRILE. I am from Cleveland, Ohio. I support all that has been said concerning the merits of this enterprise. For myself I would say the problem of tropical diseases is a problem that is peculiar to itself.

Last winter I spent some time hunting in eastern Africa. The white men there, the British settlers in the British area of occupation, were struggling with this problem of tropical diseases as they have been for a long time, because it is a thing that interferes with the colonization of Africa. Their problem is just what we are talking about. Everybody there sooner or later has these diseases, children, settlers, and even the animals are full of disease. They can not control it efficiently. They appealed to the Rockefeller Foundation to give them help. They are taxing their resources to establish the type of laboratories we have here, because they realize they can not go on and colonize British East Africa unless they do build up a body of intelligence concerning the diseases they have to combat. It is the only thing that interferes with their colonies, and constitutes the reason that Africa is not colonized to-day in these centuries of time. The thing that has kept the white man out of Africa is the incidence of these peculiar tropical diseases, and that is due largely to the fact that they are diseases caused by animal parasites. There are no cold winters to kill the animal parasites, so they stay in their habitat the year around, century after century.

We have that trouble here on a lesser scale exactly, so that the only way to meet the problem is to organize the attack.

There may be in the minds of some people a question as to whether or not we are duplicating effort in setting up another laboratory to attack these great problems of tropical diseases. We are so utterly removed from the solution that there is no possible chance of attacking too much or in too many ways. Duplication would mean nothing at all because we will never in our time, or for centuries of time, perhaps, be able to eradicate all the enemies of man in the tropics. It will be a perpetual problem and the greatest problem we will have. The climate is the least to contend with. There are other conditions to be met.

Mr. COOPER. It occurs to me that really there is nothing in the idea that would interfere with the Rockefeller Foundation, which, of course, is doing a noble work, because nobody, no corporation, can preempt the right to begin investigations or conduct investigations to better humanity.

Doctor CRILE. No.

Mr. COOPER. This is a question of the Government doing what it can to help people.

Doctor CRILE. And help itself.

Mr. COOPER. Yes.

Mr. THATCHER. Let these great institutions supplement the work of each other as much as possible.

Doctor CRILE. In this colony of Nairobi almost every white man is sick part of the year, and they are asking for help from every source they can get it.

Mr. COOPER. Where is that?

Doctor CRILE. Nairobi is in the British East Africa colony. All that I can say is that in my hunting trip there I was lucky to get out with a whole skin. The animals you met were not a menace so much as was the threat of contracting one of these tropical, parasitic diseases, against which a man is constantly trying to protect himself and hoping to get through alive. We need not feel finicky about giving a little help to attack such a problem, one that is really away beyond the means of everybody put together to solve. The amount of effort put forth can not be overdone.

Referring to this question of duplication of effort which has been mentioned here to-day, we find that in all our educational institutions, not only in preventive medicine, but in business, chemistry, engineering, invention, and in all human knowledge, no one speaks about duplication. What we do not know in this world is so stupendous, compared with what we do know, that the question of duplication does not count at all, in my opinion.

Finally, then, I should think that the only way we can make any progress is for the white man to set up outposts of intelligence, and I am not speaking of the United States alone, but of all the advanced countries of the world. If they are ever to conquer the Tropics, it will be by establishing a great many outposts of intelligence and information so that they may attack their problems. Aside from that, I do not see any way it can be done. The British Empire realized this, and just now I think the United States is in the best position to extend this idea. The interesting part of it is that if anybody in laboratory medicine makes a discovery or any advance at all, at once it is communicated to everybody else; and if other people are working on the same problem they at once relinquish that work and attack the great body of ignorance that is still open for them to attack. I think there is no chance of duplication at all in this problem.

Mr. MOORE of Virginia. It is almost nonsensical to talk about duplication in respect to such a matter.

Doctor CRILE. It strikes me that it would not exist.

Mr. MOORE of Virginia. You might as well abolish the Carnegie Institute, the Smithsonian, or the Bureau of Standards because in a way they are doing the same sort of work along certain lines.

Mr. THATCHER. Or suppress the spirit of invention for the same reason.

Doctor CRILE. I will not take up the time of the committee further except to just repeat the theme as I see it, and that is that the most we can do is to, at least, put outposts on this great highway of travel

and communication, keeping in mind all the time that in the Tropics particularly, more than in temperate zones, you have these sudden outbreaks of all sorts of diseases that are communicated, even among the wild animals. The animals in the tropics are full of diseases of all sorts and kinds, and they are always communicating those diseases to men. It would be such a sensible thing for us to do as a piece of strategy, to put a fort of intelligence out there in the highway of communications, on the Isthmus of Panama, so that if some outbreak of disease arises, we do, at least, have that outpost of intelligence to protect us.

Mr. COOPER. Your statement is most interesting. Will you give us what you think, as a result of your observations, are the principal diseases in that part of the world? What is the nature of them?

Doctor CRILE. Some have been stated already by Doctor Crowell. For instance, a most interesting thing to me is sleeping sickness. We can not tell, the natives do not know, where it is; but because the animals move around they carry the disease. Then they found at one time by following the animals that carried the disease, that the next thing to happen was that the man himself became the carrier. Nature is so intricate, we hardly know how to attack the problem, and we are looking in a number of directions for information, but we are groping.

We hope this laboratory will be established because I think it would be a most popular measure with the country at large, and it seems to me that all of us would feel we had done something to protect ourselves, even if we omit the protection it would be to everybody else in every part of the world.

Mr. COOPER. Do you think public funds could be put to a nobler use?

Doctor CRILE. Any such sum as this I myself feel is a modest request, considering the problem; and as to this being an entering wedge to get more money later on, the main point is that even if Congress should not feel that there would ever be a time when there is great promise made and great need existed for extending such a laboratory, even if Congress did not do it, I am sure the citizens would do it, and it would seem to me from that standpoint it would be a very desirable thing to do.

Mr. BURTON. It has been our experience that whenever a bureau is organized or an enterprise is started by the Government, the original, annual, or other expense is oftentimes multiplied in a few years. This proposition involves an expenditure of $50,000 per annum by the United States Government, and approximately $37,500 by other governments. What do you think of the sufficiency of that amount to carry on useful investigations for years to come? What do you think of the probability that after a few years this corporation would come here and say that is not enough; we want more money?

Doctor CRILE. I say that the amount of money contemplated being used here would always cover the salaries and necessary expenses of very brilliant research men. I think it would command a very high order of talent, and when you have that you have the principal item of expense. I can not see that it would require more than that.

Mr. MOORE of Virginia. It is not to be a Government bureau; it is a private institution which the Government is to assist in establishing?

Doctor CRILE. Yes.

Mr. MOORE of Virginia. You would expect if it got well under way that it would receive very liberal private contributions.

Doctor CRILE. I would say so.

Mr. MOORE of Virginia. The Smithsonian is a private institution and receives help from the Government. The Smithsonian receives very liberal benefactions from private sources. The cases are parallel.

Doctor CRILE. I should think so.

Mr. THATCHER. You carry on research work yourself in your institution?

Doctor CRILE. Yes.

Mr. THATCHER. And you are qualified to speak advisedly concerning the expense of personnel for work of this character?

Doctor CRILE. That is the only way we can do. We spend a lot of money all the time in that direction for similar things. I think it is one of the greatest problems we can attack and I believe, as Mr. Moore stated, that as time goes along, and we understand it is a great problem it will always attract great minds toward the question of attacking it. Their desires are to attack great problems. I think you will get in the personnel, perhaps, our most brilliant research men because they see the great problem it is. We all know that nothing succeeds like success, and as you make a successful beginning, whether the Government does anything more, or not, if anything more is necessary you may be quite sure that some philanthropist will want to see that work done and take care of it. I myself think if the Government does this, it has done well.

Mr. THATCHER. Do you think the appropriation should begin now as contemplated in the bill, or wait until the structure is actually erected?

Doctor CRILE. It would be better if you could start now, because men could go about their work and organize their problems. It takes quite a while to attack anything. The cost is small enough. The main problem is going to be to get the personnel for the laboratory and that is necessary to be trained. It will take a few years to do anything.

Mr. LINTHICUM. Would there be sufficient money to carry on research work?

Doctor CRILE. It would provide for adequate salaries as far as that would carry us.

Mr. BLOOM. Is there field work as well as laboratory work?

Doctor CRILE. Yes.

Mr. BLOOM. That is what you would do in the meantime?

Doctor CRILE. Yes.

Mr. TEMPLE. The Gorgas Memorial Institute is incorporated already, under what laws?

Mr. THATCHER. Under the laws of the State of Delaware; and with your permission I will be glad to insert in the record at the proper place, if not the entire articles of incorporation, at least extracts showing the purpose and scope of the work. I have the articles here.

Mr. Wellcome is here. He is the founder and director of the Wellcome Historical Medical Museum, London, and founder of the Wellcome Tropical Research Laboratories at Khartoum, Anglo-Egyptian Sudan. He visited the Panama Canal and knew the work of General Gorgas there.

STATEMENT OF HENRY S. WELLCOME, ESQ., FOUNDER OF THE WELLCOME BUREAU OF SCIENTIFIC RESEARCH (INCLUDING TROPICAL MEDICINE AND HYGIENE); THE WELLCOME AFFILIATED RESEARCH INSTITUTIONS AND MUSEUMS, LONDON, ENGLAND; AND OF THE WELLCOME TROPICAL RESEARCH LABORATORIES AT KHARTOUM, AFRICA

Mr. WELLCOME. One of the speakers (Mr. Thatcher) referred to the probability that in the course of time when the United States would become overpopulated there might be extensive migrations to Central and South America. Migrations to the south have been the general tendency in all ages, as recorded in history.

Reclaiming and making habitable the unhealthy and forbidding areas of the earth will result in untold good, not only to the people living in and in proximity to such regions; but work of this nature is a matter of great importance when consideration is given to the steady increase of population in practically every country, and to the economic problems of humanity.

Modern scientific methods of reclaiming for the use of man millions of square miles of the earth's most fertile regions, which for ages have been fastnesses of death, must incite the interest of all who give study to the gratifying results already accomplished, and to the possibilities which still lie ahead of us.

With respect to this great problem of providing bread for the hungry, clothing for the needy, and of relieving humanity of the ailments and disorders of the human body, I would like to say something of the pioneer work of Sir Henry M. Stanley, the great African explorer, with whom I have many times discussed the very problem in which you are so vitally interested.

We will all recall how Stanley sought, found, and relieved Livingstone when he was in great difficulties and distress in the center of tropical Africa, and how Stanley succeeded Livingstone in the memorable work of exploring the Dark Continent, for the purpose of solving the scientific geographical problems, of opening the way for Christian civilization, and of improving the lot of millions of human beings living in the most revolting conditions of savagery.

After many years of travail in the vast unknown regions of Africa, Stanley had come to believe from his own experiences, having often been unconscious and for many days near death from deadly fevers of the jungle, that the white man could not cope with the malaria and other tropical diseases of equatorial Africa.

This continued to be the belief of Stanley until he saw what could be accomplished by the scientists who stood ready to take up the great work of fighting the pestilence and death of the jungles, after Livingstone and Stanley had opened the way.

I quote from the notes in the Biography of Henry M. Stanley, edited by Lady Stanley after the death of her distinguished husband, page 407:

From his own terrible experiences Stanley realized to the full the barrier which malaria and other dread tropical diseases imposed against the progress of civilization and commercial enterprise in Africa; and he followed with keen interest and hopefulness the discoveries of Sir Patrick Manson and Major Ross, proving the mosquito to be the host and carrier of the malarial parasite, and also the successful devices of these scientists for checking and reducing the death toll from this scourge.

He particularly applauded the great, far-seeing Colonial Secretary, Joseph Chamberlain, for his practical measures, by which he had done more than any other statesman to render the tropical regions of the Empire habitable and healthy.

Stanley's last public appearance was at a dinner to Dr. Andrew Balfour, on his appointment as director of the Wellcome Tropical Research Laboratories, Gordon Memorial College, Khartoum, and, in the course of a very moving speech on the development of Africa since his first expedition, Stanley said that, at one time, he thought the equatorial regions possible for the habitation of natives only, except in limited highlands; but now, thanks to the work of the London and Liverpool schools of tropical medicine, and these research laboratories in the heart of Africa, the deadly plagues that harassed mankind were being conquered, and the whole of that Dark Continent might yet become a white man's land.

Stanley's remarks are, I believe, equally applicable to the problems of Central and South America. My own experiences during extensive journeys through Mexico, Central and South America, have convinced me that all things are possible in rendering the most deadly regions of those countries habitable by peoples of all races if they are properly dealt with in the same manner that General Gorgas dealt with the Isthmus of Panama, where he changed the Canal Zone from one of the most pestilent to one of the healthiest places on the face of the earth.

My first experience with malaria was a virulent infection from a mosquito at Panama before the scheme of constructing the canal was begun. Another equally virulent infection was inflicted on me while on the Manyon River, one of the tributaries of the upper Amazon, on the eastern slope of the Andes. Aside from my general interest in such matters, these experiences aroused my personal interest and incited me to the study of tropical problems, and especially tropical medicine.

With respect to Panama being the ideal location for the Gorgas Memorial Tropical Research Laboratory, I would say that Sir Patrick Manson, the original discoverer, or the first to definitely conceive and work out the idea and realize that the mosquito was the host and carrier of malarial infection, considered Panama to be one of the great tropical disease danger centers of the world. A number of years ago he pointed out that ships passing through the Panama Canal, and to and from the Isthmus and all parts of the world, would bring and carry all manner of diseases—bringing and leaving diseases, while picking up and carrying others to various parts of the world. Sir Patrick regarded this as a very serious matter and he expressed to me repeatedly his very strong views on this subject. I have heard him make similar statements at the London School of Tropical Medicine and elsewhere. Furthermore, I know that General Gorgas also held that same view.

Dr. Franklin Martin has requested me to say something in regard to tropical diseases and the manner in which they have been dealt with in the Anglo-Egyptian Sudan, in the Upper Nile regions in the very heart of Africa, and to speak of the successful results of scientific tropical research work in reclaiming these regions.

The Anglo-Egyptian Sudan lies to the west of Abyssinia, and some portions border on the Red Sea.

The Queen of Sheba's Empire is believed by some historians to have embraced the present Empire of Abyssinia, the Anglo-Egyptian Sudan, and a portion of Arabia. The present dynasty of Abyssinia claims direct descent, and also inheritance of the golden imperial crown, from the Queen of Sheba and King Solomon.

A large portion of the Sudan consists of desert land, but when irrigated yields abundantly to the cultivator. The lands bordering on the Nile are extensively irrigated by very ancient methods. Some portions of the Sudan have vast regions of a swampy nature and supply limitless breeding places for disease carriers. The frequent fluctuations of the rise and fall of the Nile form abundant breeding pools in the desert regions as well as elsewhere.

Many of you will recall that historic figure, Gen. Charles Gordon, widely known as "Chinese" Gordon, who, with marvelous strategy and a small army, suppressed the great Tai Ping rebellion in China. After his brillant achievements in China, Gordon turned to Africa and devoted much of his life to suppressing the Arab slave raiding in the Anglo-Egyptian Sudan, of which country he was appointed governor general.

General Gordon administered that country with great ability and won the loyalty and the lasting affection and regard of the natives; but the Arab slave raiders were his deadly enemies, and he carried out his purposes in the face of constant perils.

Finally, when Gordon had suppressed these slave raiders to a large extent, he retired from the Sudan and was engaged by Henry M. Stanley to assist him in his efforts to wipe out Tippo Tib's merciless slave and ivory raiding in the Belgian Congo Free State. General Gordon was preparing to take up these duties when a great fanatical uprising and rebellion occurred in the Anglo-Egyptian Sudan, led by the Mahdi, a new Messiah, assisted by a powerful and cruel Khalifa, as his Chief Emir, or commander in chief.

This outbreak was apparently facilitated by the unfortunate excesses and the misrule of certain Egyptian administrators, who unsparingly had exploited the natives and oppressed them even more ruthlessly than the Turks had done before they were driven out of the Sudan. The Mahdi and his Khalifa rapidly overran the country, destroying every mark of civilization before them. Immediately the seriousness of the situation was understood there was a great outcry and call for Gordon to return to protect his loyal people. This great call to duty came from the Sudan, from Egypt, and from every part of the British Empire. In this great emergency, Stanley released Gordon from his engagement and he was dispatched in haste to Khartoum and commissioned as governor general by the Khedive of Egypt.

When Gordon arrived at Khartoum, the capital of the Anglo-Egyptian Sudan, he found a chaotic situation, meager defenses, and scanty supplies of arms, ammunition, equipment, and altogether, very limited resources at his command to face the Mahdi's hordes of wild, Dervish raiders.

With marvelous gifts of diplomacy and stratagem, Gordon faced the situation heroically and utilized every means available to hold

his ground and protect the native peoples; but, alas, reinforcements and materials for defense did not reach him in time.

You will all remember the ghastly tragedy of the assassination of Gordon by a hired traitor.

The assassination of Gordon, the massacre of his heroic garrison of loyal natives, and the fall of Khartoum were followed by 16 years of turmoil and horrible fanatical savagery. While no actual census of the Sudanese races had ever been taken, it is variously estimated by responsible authorities that the number of inhabitants of the Sudan that perished in this orgy of death and destruction was somewhere between twelve and fifteen millions.

General Slatin Pasha, an Austrian officer who had spent many years in the Sudan service and who was at that time Governor of Darfour Province under General Gordon, was captured by the Khalifa and held a prisoner in chains in a dungeon at Omdurman, the Mahdi's capital. After an imprisonment of 11 years, he escaped through a rare stratagem and joined Kitchener's campaign forces as a staff officer.

Slatin, in his book "Fire and Sword in the Sudan," published in 1896, page 623, states:

* * * It is needless for me to recapitulate the horrors and cruelties which have been enacted by the Khalifa and his followers * * * at least 75 per cent of the total population has succumbed to war, famine, and disease, while of the remainder the majority are little better than slaves; and that terrible scourge, the slave trade, with all its attendant horrors, is rampant in the land, and includes amongst its victims numbers of Abyssinian Christians, Syrians, Copts, and Egyptians.

* * * Prosperous districts with a teeming population have been reduced to desert wastes. The great plains over which the western Arabs roamed are deserted, and their places taken by wild animals * * *.

Furthermore, it is estimated that of the twelve or fifteen millions of inhabitants of the Anglo-Egyptian Sudan whose lives were sacrificed by the Mahdi and his Khalifa, one-third were ruthlessly slaughtered, or died under torture, and the remainder stricken down by disease and famine.

The tortures inflicted on natives suspected of being loyal to Gordon, or to the British and Egyptian Governments, were unspeakably horrible. Such tortures, as well as cruel executions, were used as special features of entertainment given by the Khalifa for the amusement of his wives and friends.

Under the barbarous rule of the Mahdi and Khalifa, the land was devastated and laid waste by the raiding Dervishes. The people's crops, their camels, cattle, sheep, goats, and all their possessions were looted, and their homes ravished. It was one of the customs of the Khalifa and his Emirs to hack off a hand or a foot of those who refused or were unable to pay the extortionate tributes demanded, or who otherwise aroused their displeasure. Members of some of the superior tribes who were experts and specialized in camel breeding were nearly exterminated.

There had been considerable Christian missionary work done in the Sudan before the rise of the Mahdi, and these missions were all wiped out. The missionaries, including Roman Catholic priests and nuns, were made prisoners, put into chains, and thrown into dungeons, and they spent many years in cruel confinement, or died in consequence of their captivity.

Many of the native peoples of the Sudan are of fine and intellectual types, far superior to the native fellaheen, or peasants of Lower Egypt. At the time when the Romans ruled in Egypt, and sent an expedition to the Sudan to trace the sources of the Nile, estimates were recorded by Pliny indicating that within what is now the Anglo-Egyptian Sudan territory there were then something like 80 different races. To-day, it is estimated that there are now in that territory the remnants of about 50 different races; ranging in color from white, yellow, red, and brown, to black. Some of the blackest of these, however, are not negroes, and have fine aquiline features.

Some of the higher types educated at the Gordon Memorial College are to-day serving efficiently as technical assistants in the tropical research laboratories at Khartoum, while others are filling positions in the various executive and administrative departments of the Sudan Government with equal efficiency. Natives of less mental capacity are being trained at the Gordon Memorial College for various vocations in the fields of industrial pursuits.

At the time of Lord Kitchener's final victory over the Dervishes and his capture of Omdurman, the Dervish capital, a large portion of the population were suffering from various kinds of tropical and other diseases.

Smallpox had run riot to such a vast extent that a large percentage of the survivors of that period bore pox marks. One of the prompt emergency steps taken by Kitchener was to require all native barbers to be trained in the proper methods of vaccination, and he enforced compulsory vaccination of all the people. By this means he very soon effectually wiped out smallpox in that region. To-day, the marks of smallpox definitely fix the birth and existence of individuals at a time previous to Kitchener's liberation.

The obstacles and difficulties Kitchener encountered and had to surmount in reconstructing the country and in rehabilitating the people were innumerable and staggering. There was no sanitary organization at hand adequately to deal with the stupendous task.

Disease was rampant on every hand, not only human life but animal life and plant life, and all sources of food supply were infected by disease of some kind. Nearly everything was wrecked and in a state of chaos and demoralization.

I am speaking now of the time when Kitchener had reached Omdurman and Khartoum. As soon as he arrived in that devastated region his men were stricken at a terrible rate.

The deadly ravenous anopheles mosquito abounded in swarms of millions upon millions, forming clouds almost as dark as any cloud you have ever seen in the night.

Under all these tremendous difficulties, Kitchener and his staff speedily organized hospitals and relief work to minister to the needs of the afflicted native population, as well as to protect and conserve the personnel of his expeditionary forces and civil administrators.

A large percentage of his army and civil officers were stricken by disease and incapacitated, but with fortitude and a high sense of duty they stuck to their posts with the utmost fidelity.

At times something like 2,000 of his troops were in hospitals prostrated by some tropical malady. It would require volumes to describe to you the dire and distressing situation.

Kitchener, as commander in chief, supported by Earl Cromer, and ably assisted by Gen. Sir F. Reginald Wingate, was responsible for this great and heroic liberation. Says Percy F. Martin, of the London Times, in the introductory pages of his book, "The Sudan in Evolution," published in 1921, page xxviii:

* * * In their happy and prosperous condition to-day it is difficult to realize that the present inhabitants are the same peoples who were for so many years crushed and cowed, robbed and ground down to abject poverty. How wonderfully have they responded to the efforts of their new administrators, who rescued them from despair and threatened extermination! This remarkable transformation forms a high tribute to those who, with such self-sacrificing chivalry and untiring zeal, devoted themselves for 16 years to that rescue, and then for a score of years to the regeneration and uplifting of these unfortunate beings.

Cromer, the strong, wise statesman who in Egypt had brought order out of chaos, and established clean justice, peace, and prosperity, resolutely supported Kitchener in his inflexible determination to redeem the Sudan with its sorely afflicted millions, and at the same time to redeem England's honor. Wingate, a fine soldier and administrator, and accomplished linguist, who has rendered 40 years' loyal service of incalculable value to the Empire, was Kitchener's right hand and chief intelligence officer.

The record of Kitchener's marvellously organized and skilfully directed campaign of liberation and the subsequent reconstruction of the Sudan will gloriously illumine the pages of history for all time. His small but ever-victorious army was led by efficient young British officers trained in Kitchener's intensive school. It is a notable fact that most of the British military officers who achieved great successes in the World War were "Kitchener men."

Following the reconquest of the Sudan, Kitchener, Cromer, and Wingate, assisted by well-chosen men imbued with the same spirit and patriotism, have wrought wonders in reawakening, remolding, and developing this once hopeless country.

Of those three great chiefs, Wingate alone remains to serve King and country—Kitchener and Cromer have, alas! passed away.

It was my privilege to be one of the first civilians after Kitchener's reconquest, to journey on the Upper Nile and to study the conditions as they then existed in the Sudan.

I should state that at that time no provision had yet been made for medical and sanitary research work in the Sudan. Observing the deplorable conditions before mentioned, I offered to establish and equip complete tropical research laboratories at Khartoum.

The Sudan government promptly accepted my offer to present these laboratories, as a department of the Gordon College.

As quickly as possible I placed orders with expert manufacturers and craftsmen for furnishings, fittings, and equipment for these tropical research laboratories.

This work was carried out skillfully, in the most up-to-date manner, and every feature was produced as complete and perfect as possible.

The woodwork and fittings were made of the finest quality of East Indian teak which had been previously baked at a high temperature for several months to season it suitably for the Sudan climate. These laboratories were equal in every way to those of any institution in Europe.

Lord Kitchener, the liberator, Lord Cromer, the chief British official in Egypt, and Gen. Sir Reginald Wingate, the Governor-General of the Sudan, who filled that position for 20 years, all gave me hearty support and encouragement.

A highly efficient staff of expert research workers was appointed. Dr. Andrew Balfour, the first director of The Tropical Research Laboratories at Khartoum, occupied that position for 12 years, with great

ability and remarkable success. He then resigned and was appointed director in chief of my bureau of scientific research in London, which position he filled with distinction for 10 years.

Doctor Balfour, immediately on his arrival at Khartoum, was appointed chief health officer and given wide powers of jurisdiction to support him in carrying out his great responsibilities as director of The Tropical Research Laboratories.

It is one of the most essential things under such conditions that the director of research and the health officer should combine the functions of both positions, and be empowered and strictly required to inflict severe penalties for violation of sanitary laws and regulations upon all persons of all ranks.

It happened that Balfour's sanitary inspectors discovered mosquito breeding in a zir (water jar) belonging to Slatin Pasha, then inspector general of the Sudan. Balfour fined Slatin five pounds ($25). The Pasha was furious, but the offense was never repeated. A few days later mosquitoes were found breeding in Balfour's zir, and he promptly fined himself five pounds—this to the great satisfaction of Slatin and also to the great amusement of the friends of Balfour.

By seeking and destroying the mosquito breeding places, Doctor Balfour and his staff exterminated these pests and disease carriers, and, as a result, malaria was wiped out in a remarkably short time. After this work was completed, the only cases of this dread tropical malady at Khartoum were those brought in from other places, and Khartoum soon became the most healthy city in Africa. The death rate was reduced from a very high figure to about 7 per 1,000. These results were very similar to those produced by General Gorgas at Panama, where he brought the rate of deaths down from about 40 to 60 per 1,000 to 7 per 1,000.

It should be realized that the amount of work involved in these preventive measures, necessary in fighting against tropical diseases, is stupendous, and that Doctor Balfour, his English staff, and the natives he so skillfully trained as inspectors, did magnificent work, and this often under perilous conditions.

For example, such conditions as Doctor Crile has related to you. From personal experience I too can vouch for the fact that lions are comparatively safe animals and far safer than some of the tropical insect pests, which he has described to you. The lion is naturally a gentleman, has good manners, and plays the game. If properly trained, he is an exceedingly agreeable companion in camp life, as I have found by experience in Africa.

By means of camel caravans starting from The Tropical Research Laboratories at Khartoum, tropical research expeditions with camp laboratory equipment were sent out through the Sudan Provinces to study and combat the various prevalent diseases and to collect specimens to be dealt with in the chief laboratories at Khartoum. Under caravan camp conditions laboratory work is greatly handicapped and exceedingly difficult.

The more effectually to carry the war into the enemy's country, Doctor Balfour designed a floating laboratory which was completely furnished, fitted, and equipped by me for the full range of tropical research. It is screened with bronze mosquito netting, and other means also were devised to protect, and as far as possible to provide comfort for the staff of expert research workers while engaged in

their investigations and in their daily life. This floating laboratory is supplied with a powerful launch which tows it in its cruises up and down the Nile and its various tributaries.

Where there are navigable waterways, this floating laboratory has proved to be a thoroughly satisfactory means of carrying out investigations of tropical diseases and of dealing with fresh material and specimens on the spot. Among the serious handicaps of the caravan-camp laboratories was the difficulty of preserving materials, specimens, etc., which often were decomposed before they could be dealt with in a fully equipped laboratory. By means of the floating laboratory researches can be carried out at once in any location.

Kala-aza, one of the most deadly of tropical diseases, is prevalent on the Blue Nile and the near-by Abyssinian border of the Sudan. Two keen and efficient members of the staff of The Tropical Research Laboratories at Khartoum, Doctor MacTier Pirrie and Mr. E. Inglis, became infected and sacrified their lives in the cause of tropical research. I know of only two cases of white men, who have been striken with kala-aza in the Anglo-Egyptian Sudan, that have survived.

It may be of interest to you to recall that, according to traditions accepted by some historians, this kala-aza region is within the borders of Aloa, one of the kingdoms of the Queen of Sheba's Ethiopian Empire. In the course of my archæological explorations in the Sudan, I discovered the site of the alleged capital of this Kingdom and have been carrying out excavations and researches on this site.

Mr. MOORE of Virginia. What is the nature of that disease?

Doctor CROWELL. I have already referred to that disease as leishmaniasis. It also manifests itself in skin eruptions.

Mr. COOPER. It has a different name in the Tropics?

Doctor CROWELL. It has several different names, including kala-aza, etc. It exists in India and northern China as well, and there are cases in the Philippines.

Mr. WELLCOME. I should say that not only Doctor Pirrie and Mr. Inglis gave their lives in the cause of humanity and medical science in the Tropics, but also, later on, Doctor Albert J. Chalmers, successor to Doctor Balfour as director of The Tropical Research Laboratories at Khartoum and a very distinguished scientist and authority on tropical diseases, yielded his life as a result of his tropical research work in the Sudan.

Among those who have given their lives in the cause of science and humanity in the Sudan, I must also mention Dr. William Beam, an American scientific chemist of distinction from Philadelphia, Pa., who possessed exceptional qualifications and ability. Doctor Beam was chief of the chemical section of the Wellcome Tropical Research Laboratories from their beginning. He threw himself into the economic and other chemical research work with the utmost zeal and carried out many researches of the greatest importance and value to the Government, including the study of the soils and of many other problems connected with agriculture.

Especially notable among Doctor Beam's researches was his investigation of the gum-bearing acacias of the Sudan. From time immemorial the production of gum arabic has been one of the principal industries of the Sudan, but during the time of the Dervish reign this source of revenue was mostly cut off and the trees producing the gum were allowed to deteriorate through disease and neglect.

Among the last investigations of Doctor Beam were his extensive researches in respect to the possibility of making economic use of the papyrus "sudd." At the time the Romans were conducting their expedition of exploration into the far Sudan about the beginning of the Christian era, they found their way blocked in the upper Nile by vast areas of dense, impenetrable masses of this "sudd" which had accumulated during the ages and completely halted navigation.

After the liberation by Kitchener, the Sudan Government cut a navigable channel through these masses of "sudd." It was first proposed to compress this "sudd" material into bricks for use as fuel, which was done to some extent. In considering the matter, I suggested that this "sudd" might be more profitably converted into paper.

As a result of my suggestions, Doctor Beam carried on extensive researches and successfully produced from this "sudd" a pure, white pulp suitable for the manufacture of a good quality of writing paper.

Even when in failing health, Doctor Beam could not be restrained from overtaxing his strength and he died at his post of duty, after nearly 20 years of highly efficient and devoted service. The records of Doctor Beam's researches in the Sudan, as published in the Wellcome Tropical Research Laboratory reports, have been of great importance and they will remain a valuable asset to the scientific world.

Sleeping sickness, another much dreaded tropical disease, which has taken an appalling toll of human life in the Congo River region, and in Uganda, and elsewhere in Africa, has given us grave anxiety in the Sudan. This disease has been fought desperately and diligently on the Sudan borders by the zealous cooperation of the staff of The Tropical Research Laboratories and the army medical service. Strict military quarantine regulations have been rigorously enforced. Up to now this fearful disease has been successfully held at bay and not allowed to penetrate the Sudan.

Extreme vigilance is exercised and very heavy penalties are inflicted for any violation of the quarantine laws. The slightest infraction is followed up tenaciously. The introduction of a case with infection of sleeping sickness into the Anglo-Egyptian Sudan is treated as a high crime.

The borders of Uganda and of the Belgian Congo Free State are closely watched and guarded to prevent the smuggling of infected cases into the Sudan.

Stanley's expedition for the relief of Emin Pasha, the last of General Gordon's provincial governors to hold out against the attacks of the Mahdi and Khalifa's hordes, opened up a trail from the Congo via the Aruwimi River to Uganda, which was afterwards followed by the Arab slave and ivory raiders and the caravans of traders.

These Arab caravans brought with them sleeping sickness, spreading infection, which resulted, it is alleged, in the death of more than 200,000 inhabitants of Uganda. A vast amount of money has been expended in research and preventive measures to stamp out sleeping sickness, but it is still causing great trouble and grave anxiety to the administrators of the various regions affected. Much progress has certainly been made in checking and controlling it, but it is still a very serious matter.

The Tropical Research Laboratories at Khartoum have been continuously and successfully operating ever since they were established. The present director, Maj. R. G. Archibald, is a scientific research worker of rare ability and extensive tropical laboratory and field experience. He has been a member of The Tropical Research Laboratories staff at Khartoum for nearly 20 years. Major Archibald is a worthy successor to Doctors Balfour and Chalmers, the two distinguished men who preceded him.

Mr. HULL. Are these tropical research laboratories at Khartoum that you are referring to supported by public funds?

Mr. WELLCOME. They were established, furnished, fitted, and equipped at my own personal expense. They cover a wide range of work, not only tropical diseases of man, but also the study of animal and plant life—the soil and of many different economic problems. The Sudan Government has been thoroughly appreciative and liberal in supporting these laboratories. Since establishing these laboratories, I have personally contributed substantially for various expenses in connection with them. The extensive and elaborate volumes of reports, which I produced, have been very costly and have been appreciated and extensively used to great advantage by tropical research workers in all countries.

The illustrations are of especially great value as they depict the specimens in a manner that is almost equal for study to the original material. The photomicroscopic illustrations were executed by an expert miniature painter, and are actually microscopic miniatures, and required from 20 to 30 proofs to secure perfection.

Mr. HULL. You established them out of your own means?

Mr. WELLCOME. Yes.

Mr. HULL. They have been partially supported by the Government?

Mr. WELLCOME. They have been liberally supported by the Sudan Government. These laboratories carry out an immense amount of extremely important research work of great value to the Government, which it has utilized in the development and regeneration of the country. The laboratories have been given their share of credit for aiding the Government in the transformation of that devastated land into a state of great prosperity and contentment to-day.

As I have already stated, these tropical research laboratories at Khartoum were presented to, are the property of the Gordon College, and are under the control of the college trustees and governing body. The Sudan Government has generously supported them; and all of its departments have heartily cooperated and in every way encouraged the researches. Furthermore, Kitchener, Cromer, Wingate, and their successors have recognized the economic value of the researches, as rendering possible, and as being of great assistance in, the work of restoration, reconstruction, and regeneration of the cruelly ravished and devastated Sudan region of the Upper Nile. These laboratories carry out an immense amount of work of vital importance to the government.

Some years since these tropical research laboratories were completely destroyed by fire, but, with all possible speed, I completely restored, refurnished, refitted, and reequipped them with the latest-up-to-date scientific laboratory requirements equal to any research laboratories in the world. Unfortunately, many valuable specimens and priceless records were consumed by the fire.

I should mention that these research laboratories occupy a section of and are affiliated with the Gordon Memorial College at Khartoum.

In 1899, as a part of the work of redeeming the Sudan and planning for the future welfare of its peoples, and as a benign and lasting memorial to the martyred General Gordon, Kitchener founded the Gordon Memorial College, which is practically the University of the Sudan and the administrative center of the government's department of education.

Owing to the rational character and methods of instruction, the pupils of the Gordon Memorial College are prepared by vocational training for practical pursuits, with a view to the highest efficiency and usefulness according to their individual capabilities. An outstanding feature of this training is that when these native students have finished their educational course they have not been made too proud to work.

Gordon Memorial College has been marvelously successful, and has extended its fame and influence throughout Africa. Sons of prominent native chieftains in neighbouring territories are seeking admission, and administrators in distant parts of Africa are applying for native teachers trained in Gordon College. Throughout the Sudan the Gordon Memorial College has established auxiliary schools which carry on primary instruction and which serve as feeders to the college at Khartoum. The number of natives being educated by this institution is over 6,000.

By the desire of Lord Kitchener and Gen. Sir Reginald Wingate, I was made a member of the executive committee of the governing body of the Gordon Memorial College at the time it was founded, in which capacity I still have the honor to serve.

The functions of the Wellcome Tropical Research Laboratories at Khartoum include—

(*a*) The study of tropical hygiene and of tropical disorders, both of man and beast, especially the communicable diseases peculiar to the Sudan, and to co-operate with, and to render assistance to, military and civil medical officers, officers of health, and the clinics of the civil and military hospitals.

(*b*) The study of plant diseases, both those due to fungi and other vegetable parasites, and those caused by insects, the study of harmful and beneficial insects, and especially of insects in their relation to tropical medicine.

(*c*) To carry out investigations in connection with cases of poisoning, and to develop methods for the detection of the toxic agents which may be employed by the natives.

(*d*) To carry out chemical and bacteriological tests in connection with water, foodstuffs, and other sanitary matters.

(*e*) To make analyses and assays of soils, minerals, ores, fuels, etc.

(*f*) Finally, to carry out investigations in connection with agricultural and forest products and operations, and, generally speaking, of any material which may be of practical interest in the economic development of the Sudan.

At the time of the liberation the administration of the Sudan was conducted at a very heavy loss to the exchequer. An enormous expenditure was absolutely necessary and urgent, while the revenue was practically nil. No substantial revenue was available, and the accounting showed a very heavy deficit at the end of each year.

Mr. Moore of Virginia. What did you do concretely to stop malaria?

Mr. Wellcome. The director, immediately on taking up his duties, organized a most perfect system of thoroughly searching out the breeding places, and destroying the larvæ of insect pests, especially of the mosquitoes. This work varies greatly according to

locality and conditions. Even in the desert regions you will find the Nile frequently rising and falling and forming stagnant pools, thus supplying an abundance of ideal breeding places.

All agriculture in the desert and other dry regions requires irrigation. Wherever you have irrigation ditches and wherever there are pools of stagnant water, they serve as breeding places. The extensive Sudan irrigation schemes will create vast and dangerous breeding places requiring the utmost vigilance and skillful control.

The director of the laboratories dealt with these problems rapidly, thoroughly, scientifically, and effectually.

There are an infinite number of novel and complex problems in connection with the discovery of the innumerable secret breeding places of the mosquito and the prevention of further propagation. The utmost dexterity and the genius of a Sherlock Holmes are required to ferret out and circumvent the artful ways of the mosquito. If reference is made to the reports of the Tropical Research Laboratories, pictures will be found showing a variety of breeding places of the mosquitoes along the Nile.

Mr. Moore of Virginia. You did the same sort of work in malaria that we do in this country in trying to exterminate it?

Mr. Wellcome. Yes. I might mention in this connection that General Gorgas looked forward with considerable fear and anxiety to the time when the great waterways of the United States would be extensively utilized for navigation, and when vast excavations would be carried out in the construction of canals to link up the great rivers. Also to the extensive schemes of dredging to make deeper channels for navigation, so that deep draft ships and even sea-going vessels might navigate the inland waterways. The danger of these extensive and necessary operations, which incidentally form numberless breeding places for insect pests, would prove to be a serious menace and might lead to extensive outbreaks of malaria, yellow fever, and other infectious diseases, unless proper safeguards and thorough preventive measures are taken.

Mr. Hull. Have you withdrawn from research work, or are you just on a visit to America?

Mr. Wellcome. I am here on a visit, but I have not withdrawn from tropical research. I am still interested and actively engaged in it.

In further reply I would say that in London I founded the bureau of scientific research, including tropical medicine and hygiene. This bureau contains twelve laboratories for conducting researches in the various departments of medical science. Immediately associated with this bureau is an extensive museum of medical science, with exhibits from all parts of the world showing specimens, models and pictured representations, illustrating the various tropical and other diseases. The purpose of this museum is, so far as possible, to visualize to research workers, medical men, health officers, and students in medicine and other fields of science the actualities of various diseases, the causes, preventive measures, curative methods, etc.

This institution is international, educational, and is open, free, to medical men, health officers, students, and scientific research workers from all parts of the world.

After 12 years of extraordinary success and strenuous and efficient service as director of the Tropical Research Laboratories at Khartoum,

Doctor Balfour resigned for health reasons and was appointed director in chief of the bureau of scientific research in London. My several other research institutions and museums are affiliated and cooperate with this bureau. In 1914, on the outbreak of war, this bureau and its entire staff were placed at the disposal of the British War Office, and their services were accepted for the entire period of the war.

Dr. Andrew Balfour, director in chief of the bureau, and Dr. C. M. Wenyon, the first assistant director, were each given commissions by the British War Office, with rank of colonel, and both rendered distinguished active service in the field throughout the war. The remaining staff were actively engaged in tropical and other medical research, incidental to the war requirements, and they trained inexperienced medical officers for the tropical fields of military and naval operations.

Mr. MOORE of Virginia. You mentioned the name of the Englishman who was the original discoverer of the mode of transmission of malaria, in the Tropics.

Mr. WELLCOME. Yes; Sir Patrick Manson.

Mr. MOORE of Virginia. Did he not make the examination first in the Campagna, between Rome and Ostia?

Mr. WELLCOME. Sir Patrick had experiments made in the Campagna after he had for a long time made various other experiments and observations. The experiments in the Campagna were carried out under his instructions by two members of his medical staff. The experiments were carried out in inclosed structures, screened with mosquito-proof wire netting where the operators could perform the experiments free from the risk of being infected themselves.

Mr. MOORE of Virginia. He used houses with wire screens?

Mr. WELLCOME. Yes. Then Sir Patrick had some of the infected mosquitoes brought to London where he successfully inoculated his young son, quite a young boy at that time, and proved his theory; thus reminding us of Edward Jenner's proof of his theory in regard to smallpox by inoculating the young child with vaccine virus.

Mr. MOORE of Virginia. Your recollection is that he reached his definite conclusion as a result of what was done in the Campagna?

Mr. WELLCOME. Yes; it was what his staff did by his direction when he sent them down to the Campagna and instructed them what he wished them to do, together with his successful inoculation of his young son by means of the infected mosquito. It was, I believe, on the results of these experiments that he based his definite conclusion.

Maj. Ronald Ross, also a distinguished authority on malaria, was associated with important experiments in connection with the early researches.

Mr. THATCHER. What date did you go to Khartoum and start that laboratory work?

Mr. WELLCOME. About 1901.

Mr. MOORE of Virginia. You might be interested in knowing that the colony which England sent over to Virginia which located at Jamestown, was twice nearly destroyed by malaria.

Mr. WELLCOME. No; I did not know that. What you state is very interesting to me.

Doctor CUMMING. Yes; and my understanding is that they moved up to Williamsburg because of the malaria down there.

Mr. WELLCOME. It is probably within your knowledge that malaria at one time prevailed in England, especially in the Fen country. Some of the anopheles mosquitoes still exist there, but they are not infected.

Mr. COOPER. How long have you been engaged in this sort of work?

Mr. WELLCOME. Ever since I was a young student.

Mr. COOPER. You established that splendid institution in Khartoum with your own means?

Mr. WELLCOME. Yes.

Mr. COOPER. I think it is good to hear this when everybody is saying this is a materialistic age. I doubt if there is any similar or more eloquent narrative of philanthropy than we have just listened to.

Mr. WELLCOME. I am sure that none of the gentlemen here could have seen those mere skeletons of men, women, and children, stalking about in a state of extremest emaciation, cases of exhaustion and utter prostration, without being moved by deep emotions to do something to mitigate the pitiful condition of these poor and sorely distressed people. As an illustration of conditions met with, I would mention my visit to one of the small islands of the Nile, a short distance above the Shabluka Cataract, where one of Kitchener's boats was wrecked during the course of his campaign. On that island there were perhaps 30 or 40 inhabitants. Every soul on that island was lying helplessly prostrate and practically speechless. So weak and emaciated were they that not one of them had strength enough to enable him to get up and milk their goats for their needed nourishment.

Acting as good Samaritans, natives came to this island from the mainland, brought food, milked the goats, nursed the babes, and showed as tender sympathy and as high a sense of humanity as could be found in any Christian community of any race. Furthermore, they warned me to be careful for fear I might catch this dread disease from which these island people were suffering. I believe the cases were malaria in an extremely virulent form. All these people of the island were so emaciated that their skin was drawn taut over their skeletons.

It was very touching to see those natives who had come off from the shore to alleviate the suffering of their neighbors. This indicates in an agreeable manner how, in times of distress, the whole world is akin. I have been informed of instances where natives who were of enemy tribes came under truce to assist their neighbors when helplessly ill.

When visiting this small island, it occurred to me that where one could get such an isolation of cases as I found there, what an advantage it would provide for proper investigation.

One thing that impressed me greatly when I was at Khartoum was the possibility of making that city as healthy as New York, London, or any other place. With its central location, it occurred to me that one could reach out in various directions from Khartoum, as a base, and collect materials and specimens for scientific investigation. Doctor Balfour has proved not only that possibility, but he has accomplished the fact.

Some time after the liberation and restoration by Kitchener, I had several thousand of the natives of various tribes and from various

parts of the Sudan working in my archæological excavation camp at Gebel Moya. No one was admitted to the camp until he had satisfactorily passed the strictest examination by my chief medical officer, and so rigorously were the sanitary regulations enforced, that not a single case of infection occurred in my camp, either among the natives or my European staff. Among the various other precautions, incinerators were constructed and every particle of refuse was scrupulously collected and burned.

Mr. THATCHER. You have been a manufacturing chemist?

Mr. WELLCOME. Yes, I am still carrying on my chemical industries, but have retired from the active direction of them. However, I continue to control and direct the policy.

Mr. THATCHER. This other work, your research institutions and museums, have taken a great deal of your time, as well as your means?

Mr. WELLCOME. Yes, sir. My bureau of scientific research, and my several other research institutions and museums in London are affiliated. Each has its own responsible director. The director in chief of the bureau and the directors of the other scientific institutions cooperate in their operations. These institutions are entirely separate and distinct from my chemical industries.

I have endowed these institutions in such a manner as to secure their continued development in the far future, when I have crossed the bar.

Mr. THATCHER. You believe that this proposed location for the Gorgas Memorial Research Laboratory would be an ideal location?

Mr. WELLCOME. I believe it to be an absolutely ideal site, and, as I have already intimated, Sir Patrick Manson was strongly in favor of such an institution being permanently established on the Isthmus of Panama for the protection of the world. I discussed this subject with him repeatedly, and on one occasion shortly before his death.

Dr. Franklin Martin desired me to speak of my personal visit to the Canal Zone and of my inspection and observations of the sanitary work done under the direction of General Gorgas.

When I was in Washington in 1910 the Secretary of War, the Hon. J. M. Dickinson, who knew of my experience and interest in tropical research, told me that he was having difficulty in resisting a movement that was then being pressed to cut down the appropriation for the sanitary work being conducted at Panama by General Gorgas. As you know, Gorgas had rescued the sanitary work in the Canal Zone after it had once been paralyzed because of the inadequate appropriations.

Secretary Dickinson requested me to make a thorough detailed inspection of the conditions and of the methods of operation in all sections of the Canal Zone and to write him an unbiased report based on my personal observations. He also requested me to add to my report any suggestions and opinions that I might be able to offer which would be helpful to him in forming just and proper conclusions.

I complied with the Secretary of War's request, visited the Isthmus of Panama, and met most of the principal officials of all departments connected with the canal construction work. Every facility was extended, enabling me to inspect all sections in the field and the various establishments.

I want to say that I have never seen anything anywhere that equalled the perfection of organization, systematizing, and direction that I found under the administration of General Gorgas.

Gorgas had gathered about him a wonderful staff. The staff was not only efficient, but was putting heart and soul into the performance of its duties.

General Gorgas, the assistant chief, Colonel Phillips, and Mr. Le Prince, the chief sanitary inspector, personally aided me in a general survey of the organization, scope of work, methods, etc. They also, from time to time, discussed with me very fully the details, past and present, and demonstrated in a comprehensive manner how the organization and methods of procedure had been worked out and developed.

From first to last, these gentlemen and their staffs extended to me every possible facility for gaining information. I took the liberty of making very free interrogations, and was invariably answered frankly and freely. Any suggestions I offered were well received and carefully noted for consideration.

General Gorgas took me in his canoe on long cruises through the reeking Panama swamps, and explained to me the infinite number of problems that had to be solved in order to master the situation.

In these swamps were found some of the worst obstacles and perplexing difficulties he had to encounter. One of the various serious problems which have baffled many workers in the humid Tropics has been how effectually to destroy and keep under control the rank plant life that springs up in a night with overwhelming rapidity at the water's edge and in marshy places, forming cup-like receptacles that are filled by the rain and make abundant breeding places for mosquitoes, etc. Such growths are most difficult to cope with on account of the great cost of labor in constant cutting.

The Panama sanitary staff invented a very simple but powerful blast of burning petroleum spray which generated a tremendous heat, and not only rapidly destroyed the thick succulent stems of such plants but also damaged the roots preventing or greatly retarding regrowth.

On the sloping lawns, the undulating and sloping grass-covered grounds and hillsides, seepage from the water-soaked soil and the rainfalls would produce little cups of still water.

A very bad type of mosquito breeding places which has also given great and persistent trouble in other countries is very abundant on the Isthmus. In certain localities small crabs constantly form vast numbers of cup-like holes in water-soaked soil and along the sea beach when the tide is out. These holes, filled by seepage of sea water, become prolific breeding places, notwithstanding the tradition that the mosquito will not breed in sea water. By a very clever expedient conceived by the staff, this trouble was successfully overcome by spreading dry sand over the places frequented by the crabs. This is simple and inexpensive but effectually stops breeding.

These are but slight examples of greatness in little things.

Nothing was forgotten, nothing was overlooked; this was a petty war but a mighty one. At the time of my visit, General Gorgas had gained such complete control in his operations that he was carrying on his preventive measures at the cost of one cent a day per man. At that time from fifty to sixty thousand men were employed in the Canal Zone, and malaria had become practically nonexistent. A finer piece of economic health control would seem to be impossible. Most of the cases of malaria, yellow fever, etc., were imported and

had been infected before they came to the medical and quarantine officers for examination.

General Gorgas kept inspectors on the railway trains that crossed the Isthmus, requiring them to search every nook and corner of every car to find straggling mosquitoes. It is shown in the statistics that in the beginning of his sanitary work, after he started this system of train inspection and the destruction of these straggling mosquitoes, the number of malaria infections was thereby reduced by something like 10 per cent. This illustrates the precision and thoroughness to the utmost detail which characterized the methods of Gorgas.

The facilities at that time for inspection along the Canal and railway left much to be desired, as a great deal of time was lost in waiting for trains, etc. I suggested to General Gorgas a laboratory inspection car for himself and one for the assistant chief, each car to be fitted with a small laboratory equipment suitable for field experiments, tests, etc.; and also to be fitted with first aid emergency equipment and one or two adjustable, collapsible stretchers. I also suggested a smaller and very light laboratory motor car for the chief sanitary inspector, fitted with very small and light laboratory equipment suitable for field experiments and tests.

I believed that these laboratory motor cars would greatly facilitate the work, save much time, and increase efficiency of service. Such cars should be of very light construction, with sufficient power, and the wheels fitted suitably for running on railway tracks, as well as on highways.

During my inspection I found the records and archives of the medical and sanitary work to be of great interest and importance.

General Noble was chief of the department of records and archives and had a masterful command of the most minute details of the valuable material which passed through his hands for record. His profound knowledge of the problems of tropical medicine and sanitary work especially qualified him for these duties.

Mr. Cooper. You spoke of archives?

Mr. Wellcome. I think I called the attention of Secretary Dickinson to the fact that these records and archives were of immense scientific and educational value. I went through them with General Noble and strongly urged that they should be published. They would do great honor to the American Government and to the War Department, as they form a marvelous record of intense interest to all research workers in the fields of medical and sanitary science.

It was very evident that the sanitary department, and especially the hospitals, were considerably understaffed. From the beginning of the construction of the canal, large numbers of subjects, not only from various parts of Central and South America and the West Indies, but also from the four quarters of the globe, were constantly passing through the wards of the hospital. This gave an exceptional opportunity for clinical examinations of an immense number of rare, and, probably, many unique diseases, such as seldom are brought together in any institution. There were innumerable interesting cases in the hospitals of the Canal Zone that could not be thoroughly investigated, because of lack of sufficient medical staff and research workers and the time necessary to deal with them. These cases came and were passed through so rapidly that, in most instances, the medical staff could neither study nor record the details or carry out researches.

The only place comparable with Panama as a receiving and distributing point for diseases, to and from the wide world, is Singapore. There is great need of an institution that can check and control these matters at Panama.

In my report to the Secretary of War, the Hon. J. M. Dickinson, I stated:

> Here is a perfectly unique opportunity for investigation. The diseases and the disease carriers, etc., can now be studied to the greatest possible advantage. If such study is delayed until after the completion of the canal, the conditions will soon materially change by the rapid development of the surrounding countries and by the migration of the peoples and the disturbance and redistribution of insect and animal life. It would then be difficult or impossible to distinguish between the local and imported pests, and thus most valuable scientific evidence would be lost beyond recall.
>
> I feel bound to urge that this research work should be very materially increased, and I feel certain it will bring economic as well as scientific reward.
>
> It is well known that various local diseases often become more or less latent or occur only in mild forms amongst the local people, but, when contracted by other peoples who have not become immune, the diseases break out with greater virulence. For example, sleeping sickness which has existed in a more or less latent form for ages in the Congo region, when carried to Uganda and other parts of Africa has swept away hundreds of thousands of natives. In like manner, syphilis, introduced by white men into Africa, proved most deadly, and almost exterminated the population in some regions.
>
> In Central and South America there are various local diseases which, if spread abroad, might prove very dangerous and the foreknowledge of these diseases which might be gained at the Isthmus would be very valuable to medical science.
>
> Having regard to the nature of the country and climate at the Isthmus, to the number of troops, staff and canal employees and their families, and to the local and floating population, which will undoubtedly be greatly increased when the canal is completed and in operation, it will be necessary to provide for the future; not only by present study and preparation, but by the formation by the United States Government of a permanent medical and sanitary department to control the health and sanitary work of the Isthmus. The best trained experts, who have intimate knowledge and experience of the local conditions, should be retained so that the work can be continued with the very greatest efficiency. The establishment of such a permanent department I deem absolutely necessary.
>
> The research laboratories should, undoubtedly, be an important feature of such a permanent medical and sanitary department.
>
> The medical and sanitary work on the Isthmus reflects great credit and honor on American medical and sanitary science. Here is to be found to-day on the Isthmus of Panama a perfectly unique American Hospital School of Tropical Medicine and Sanitation, etc. It is on a colossal scale, covering nearly the whole range of tropical work, where students may observe and study actual cases (which can not be done in our northern schools). There they can be trained by experts, and can gain most valuable practical clinical experience, which would qualify them for responsible positions in controlling and directing such work in the United States, or in other countries under American influence, etc. Tropical medicine and sanitary science have only so recently been recognized as a necessity that there are but a very limited number of experienced men qualified for this work.

This report was made 18 years ago. An abstract was published in the Military Surgeon. At that time I was thoroughly convinced of the importance of the establishment on the Isthmus of Panama of a permanent institution such as you are now considering. To-day, I am more than ever convinced that such an institution is absolutely necessary to safeguard the health of the world.

Mr. THATCHER. This Gorgas Memorial Laboratory could supply that need?

Mr. WELLCOME. Certainly.

Mr. LINTHICUM. I was interested in how you treated the matter along the Nile, where you had drainage for irrigation purposes. It would not do to treat that with oil or tar?

Mr. WELLCOME. A mere film of crude or other petroleum oil, spread over the surface of the water by spray or dripping where the egg boats, larvae, and pupae are found, is sufficient to destroy them. The amount of these oils required does not impair the water for drinking purposes.

Mr. LINTHICUM. It would not hurt the vegetation there?

Mr. WELLCOME. No. The larvacide prepared according to the formula of General Gorgas is much superior to crude petroleum, and it forms an infinitely thin film; yet this larvacide is so tough and elastic that it is not broken up or blown away from the surface of the water by heavy rains and strong winds, which are likely to break up and drive plain petroleum film against the banks and thereby quickly render ordinary larvacides ineffectual.

Mr. LINTHICUM. You were speaking of the details of General Gorgas, and I was reminded that he came over to Baltimore to help us to rid the city of mosquitoes, and as we rode through Ford Avenue, he said, "The first thing you have to do is to get rid of the water spouts on your houses." That was impossible, but we got rid of the mosquitoes.

I will introduce into the record a letter just received from a brother of mine, by special delivery. He is professor at the University of Maryland, Dr. G. Milton Linthicum, and was a colonel in the World War in the medical service operating under General Gorgas.

Mr. FISH. I will place a letter in the record.

Mr. TEMPLE. Mr. Fish makes a similar request for the introduction of a letter in the record.

G. MILTON LINTHICUM, M. D.,
Baltimore, January 19, 1928.

Congressman J. CHARLES LINTHICUM,
House of Representatives Office,
Washington, D. C.

DEAR CHARLES: I have been requested to call your attention to a bill submitted by Mr. Thatcher (H. R. 8128) for the purpose of establishing a research laboratory in conjunction with the Gorgas Memorial at Panama. I have investigated the project and the purposes of the bill are exceedingly commendable, as the many tropical diseases are little understood, and our trade lines are extending out into the South American countries, indeed into all the tropical countries, the possible spread of disease through these channels will become a menace to our own people.

I can quote you one instance particularly—that which is known as amoebic dysentery, was at one time regarded as a very rare and unusual disease in this climate, but at the present time, we not infrequently find it, and the investigations which have discovered its origin, have led to a more or less satisfactory method of treatment.

I ask your earnest support of this measure, when it comes before your committee, Friday.

With best wishes, I am,
Affectionately,

G. MILTON LINTHICUM, M. D.

J. T. HARRINGTON, M. D.,
Poughkeepsie, N. Y., January 9, 1928.

Hon. HAMILTON FISH,
House of Representatives,
Washington, D. C.

MY DEAR MR. FISH: I have just received from the Gorgas Memorial Institute, of which I am a contributing member, notice that Congressman Thatcher is to introduce a bill, or has introduced a bill (H. R. 8128) which provides for an

annual appropriation of $50,000 to operate a laboratory in Panama or the Canal Zone, where studies are to be undertaken in tropical diseases. I am told that under the provisions of the bill this laboratory is to be maintained from the United States appropriation, and other countries in Latin-America are to be invited to contribute to its upkeep. The Government of Panama has already dedicated a site for the laboratory and a building has been assured.

When I visited South America four years ago I became convinced that anything the United States can do to make closer the bonds of friendship between the countries of South America and the United States will be not only an evidence that this country is glad to help in taking care of tropical diseases, but will be a definite step in showing that we do honor the memory of General Gorgas, whose work more than any other man's made possible the building of the Panama Canal.

I hope that you and any others whom you may be able to influence will not only vote in favor of this bill but will do what you can to have others vote for it also.

Very truly yours,

JAMES T. HARRINGTON.

P. S.—I hope we shall see you in Albany the 31st.

J. T. H.

Mr. WELLCOME. I feel that it is due to the memory of General Gorgas to say something of the time referred to by Dr. Franklin Martin when General Gorgas, at the earnest request of the British Government, was on his way to Africa to study the yellow-fever problem in British territory.

Unfortunately, this proved to be the last mission undertaken by General Gorgas in the many years of his great and useful life dedicated to medical science and to the good of humanity.

Soon after his arrival in London General Gorgas was stricken with serious illness.

King George had long been familiar with the great life work of General Gorgas and upon learning of his presence in London he expressed through Sir John Goodwin, the director general of the British Army Medical Service, his desire to receive General Gorgas at Buckingham Palace. Upon being informed that General Gorgas was seriously ill and in hospital and therefore unable to be presented at the palace, his Majesty said:

If General Gorgas is too ill to come to the palace to see me, I shall go to the hospital to see him.

So deeply interested was the King in General Gorgas that he departed from the usual court custom and went to the hospital to honor the man who had scientifically applied great scientific discoveries and had conquered enemies of mankind that throughout the centuries had exacted a toll of millions of human lives.

After expressing to General Gorgas distress at his illness and earnest wishes for a speedy improvement in his condition, the King conversed with him at some length of the work he had carried out in Panama, Cuba, and other countries, especially in regard to yellow fever and its extermination. He thanked General Gorgas for all the help he had given, as Surgeon General of the United States Army, by sending medical officers and nurses to serve with the British forces in the Great War, and assured him that this help had been of immense value and was deeply appreciated.

Then, addressing General Gorgas and conferring upon him the highest honor that it was possible for the King to bestow upon anyone not a British subject, his Majesty said:

General Gorgas, it gives me very great pleasure to present you with the insignia of this order; and, believe me, I very sincerely appreciate the great work which you have done for humanity—work in which I take the greatest interest.

When General Gorgas passed away, the profoundest sorrow was expressed and manifested throughout England.

At the command of the King, and by order of the British Government, a state funeral with full military honors was accorded to General Gorgas in St. Paul's Cathedral, London, the resting place of England's greatest naval and military heroes.

This was one of the greatest and most impressive funerals in England in modern times. Representatives of the King and the royal family, the British cabinet ministers, leading statesmen, high officials and officers of the British Army and Navy, the diplomatic corps representing the great powers at the Court of St. James, and representatives of the principal medical and other scientific institutions attended and paid homage to this great man.

Hundreds of thousands thronged the streets and with bared heads reverently attested their appreciation of the lifework of this man who had contributed so much to the cause of humanity.

In speaking of the great tribute of honor and respect paid to General Gorgas by the British nation, one of the English periodicals said:

> It seems good that death should find him here, for so there came our opportunity to do a great man honour. He passed through the great door through which the sun streams into the nave of St. Paul's, and there he lay with Nelson and Wellington and all that mighty host who came this way and passed into the universe.
>
> They will take him to his own land, but in truth he belongs to us all. He was one of life's great helpers, for he cleaned up foul places and made them sweet, and now, as they said of Lincoln, "he belongs to the ages."

The British Government offered a man-of-war to convey the bereaved widow of General Gorgas, who had so faithfully aided this great man as he surmounted obstacles and climbed the ladder of his renowned achievements, and the wife of General Noble, when they began their sorrowful journey with the body of this Good Samaritan and benefactor of mankind to his native land, where your great Nation awaited to consign his mortal remains with fitting honors to their final resting place in Arlington Cemetery among America's great and distinguished dead.

Indeed, the civilized world is interested in your proposal to commemorate the life of General Gorgas by a memorial in which the spirit of Gorgas will continue on earth to bless humanity.

It is with great humility that I have spoken of my work in tropical research. I would have preferred to leave the scientific reports of these institutions to speak for themselves. However, since I was requested to appear before your honorable committee for the purpose of giving you definite and tangible facts, I have done my best to furnish you such information as would be responsive to your inquiries, and which I trust may be of service to you.

STATEMENT OF SURG. GEN. MERRITTE W. IRELAND, UNITED STATES ARMY

Doctor IRELAND. The previous witnesses have left us little to say. The establishment of a laboratory in Panama would be a fitting honor to the memory of General Gorgas, and I think Panama is the place to establish it, where he accomplished his great work. I think I ought to correct what I might say is the understanding or misunder-

standing of the committee. Doctor Crile appeared here and in his modesty he was embarrassed when you asked him about the expense of research. Doctor Crile appears before you a young man. He has been in the service of humanity so long that he has been retired for age as a member of the faculty of Western Reserve University. He has been a very eminent research man in the medical profession during the last 30 years.

Now, some of your gentlemen spoke to Mr. Wellcome here as though you did not know him. Mr. Wellcome, though he is a British subject, was born in Wisconsin, and was formerly an American citizen. In this age of progress that we are passing through the show goes by so rapidly that we do not appreciate the blessings that come to us by the work that we are talking about, and I have thought that within just a minute I could recall to your memory some of the blessings that have come to us by reason of our occupation of the Tropics. We are young in this work. We have only been in the Tropics for 30 years. During that time discoveries have been made as the result of our occupation with reference to hookworm disease that has started a tremendous campaign against this disease, not only in our country but in Porto Rico and throughout the world. Our occupation of the Tropics resulted in the discovery by Walter Reed of the method of transmission of yellow fever, which has already eliminated yellow fever from the Western Hemisphere, and in a very short time will eliminate yellow fever from the face of the earth.

As a result of the Spanish-American War and investigations that we started then, we took up seriously the study and prevention of typhoid fever. In our Army inoculation against typhoid fever was made compulsory in 1911, which popularized it throughout the United States. You might say it has eliminated typhoid fever from our Army and from the armies of the civilized world, and has reduced that disease tremendously in the population of the United States. We have made great discoveries in the control of beri-beri. We know that it can be controlled by properly milling the rice.

We have discovered methods of demonstrating how much of the pericarp must be left on the rice so as to prevent beri-beri among the rice-eating people. We have made studies of sprue and great progress in the control of sprue. We have discovered the fly that transmits sura. We have developed a serum for the control of rinderpest. We can now control rinderpest in the Tropics just the same as we control typhoid fever, by using a serum. Very recently a young officer in the Philippines has discovered a treatment which reduces the period of disability in epizootic lymphangitis from 100 days down to 10 or 20 days.

Those are things that have resulted from our occupation of the Tropics, and the foundation of this work is laboratory work. Much of it has been carried on in the field, but the foundation of all this advance in preventive medicine is based on laboratory work. We have only scratched the ground in the control of tropical diseases.

Mr. THATCHER. What do you think of Panama as an appropriate site for this character of research work?

Doctor IRELAND. I think it is ideal. It is the neck of the bottle for all that southern country.

Mr. Moore of Virginia. One might say, to vary Kipling's statement, that Panama is the place where East meets West and North meets South. It is a meeting place for the whole world.

Doctor Ireland. Yes, I think it is an ideal place to establish it.

Mr. Thatcher. Would there be any duplication of work in the work of the Canal Zone health organization at present?

Doctor Ireland. None whatever. The sanitation being done in the Canal Zone at present is just an extension of the work that was started there many years ago. They are making permanent now what was necessarily temporary work at the beginning. They are extending the sanitated areas every year in a permanent way.

Mr. Temple. It is not the purpose of this laboratory and similar laboratories to discard methods which health boards may use. Their work is the practical application of this scientific work. There is no duplication at all.

Doctor Ireland. None whatever. This problem is so tremendous that we might just as well say that the University of California is duplicating the work of the University of Virginia or the University of Pennsylvania. It is a tremendous problem extending all over the world.

Mr. Fish. Is leprosy a tropical disease?

Doctor Ireland. It occurs more frequently in the Tropics.

Mr. Fish. This will make a study of leprosy?

Doctor Ireland. They have been making very great studies of leprosy in the Philippine Islands for many years.

Mr. Fish. I know that is so.

Doctor Ireland. It has been intensively carried on since General Wood went there as Governor General. There has been a leper colony in Molokai in the Hawaiian Islands.

Mr. Fish. Is cancer prevalent in the Tropics?

Doctor Ireland. They tried to say when we went to the Tropics that cancer was not prevalent in the Tropics. They also said typhoid fever was not prevalent in the Philippine Islands. We found that typhoid fever was everywhere, and I think as they get these cases and study them in a scientific way that there is a great deal more cancer than they thought at first. Is that correct?

Doctor Crowell. My experience in the Tropics showed me cancer was no less prevalent in parts of the Tropics than in parts of the Temperate Zones I have been.

Doctor Ireland. These things are determined and controlled by scientific work.

Mr. Fish. You could carry on research work on cancer at this laboratory?

Doctor Ireland. Yes.

Mr. Bloom. The benefits derived from this laboratory work in Panama and the Philippines would extend to South America?

Doctor Ireland. Yes. The demonstrations that Walter Reed made in Cuba are being utilized in East Africa now by the Rockefeller Foundation, and that demonstration has been used to rid the Western Hemisphere of yellow fever. This is world wide, a world community of interest, and the community takes in the entire world.

Mr. Linthicum. What has been done in the elimination and cure of leprosy?

Doctor Ireland. Speaking of the Philippine Islands?

Mr. LINTHICUM. The Philippines and the Hawaiian Islands.

Doctor IRELAND. I can not speak from experience in the Hawaiian Islands, but I can of the Philippine Islands. They have segregated the lepers in the Philippine Islands. I do not know how many thousands of patients they have there.

Doctor CROWELL. There are 5,000.

Doctor IRELAND. They have been successful in treating, curing, and turning back to their homes a great many of these people. I do not know how far that can be carried on. The same thing applies to the colony under the health department of the Canal Zone. They are treating and curing these people and turning them back to their homes.

Mr. THATCHER. That is at Palo Saco?

Doctor IRELAND. Yes. I was at that colony in 1925. They turned back quite a few patients that had been in the colony a long time.

Mr. HULL. Do they turn them back as cured?

Doctor IRELAND. Yes. The health department keeps close tab on these people for a certain time to see that their troubles do not return. Leprosy is not a contagious disease like small pox and measles. A leper can live in your house and not infect members of your family.

Mr. HULL. Observing certain precautions all the time?

Doctor IRELAND. They live together as man and wife.

Mr. LINTHICUM. I went through the one at Honolulu.

Doctor IRELAND. The Molokai colony.

Mr. LINTHICUM. They had many patients and were curing a large number by chaulmoogra oil.

Doctor IRELAND. Yes; a great improvement that has been made recently is the use of the active principle of that drug.

Mr. LINTHICUM. They took me all through the place and seemed to have no idea of infection at all possible.

Mr. COOPER. Up to the time of General Gorgas and Walter Reed, the medical profession were practically a unit in believing that yellow fever was contagious.

Doctor IRELAND. Yes; and that places were contagious. In the 1898 campaign we had no idea how to control yellow fever.

Mr. THATCHER. It was believed also that filth and dirt were prevailing causes.

Mr. COOPER. They thought if you wore clothes of a patient who had yellow fever that would give yellow fever to the person who wore them. In other words, it was contagious or could be taken in by inhalation.

Doctor IRELAND. We had all sorts of theories.

Mr. COOPER. Those have been absolutely disproven.

Doctor IRELAND. Yes. We know there is just one way. That is a great thing in this discovery of Walter Reed that yellow fever is transmitted by a mosquito, and it is the only method of transmission.

Mr. COOPER. That is inoculation by a mosquito?

Doctor IRELAND. Yes.

Mr. MAAS. Would you say that the results of the work of that laboratory would be of especial benefit to the American Army?

Doctor IRELAND. Yes.

Mr. MAAS. Is it justified on that ground alone?

Doctor IRELAND. Yes; and to the American people.

STATEMENT OF REAR ADMIRAL E. R. STITT, SURGEON GENERAL, UNITED STATES NAVY

Admiral Stitt. Mr. Chairman, there would be nothing that I could say that would equal the statement of Mr. Wellcome as to the recognition of General Gorgas by the world in connection with his funeral in London. You all know his greatest work was in Panama, so this is certainly a very fitting recognition of his work from the Republic of Panama. It was very interesting to me at the start of this work of the Gorgas Memorial to have been associated with the minister from Panama, who was an enthusiast in this testimonial to Gorgas.

There are certain things about the Gorgas Memorial which have not been brought out previously, and one is the plan of President Porras that the Gorgas Memorial could use the wards in the recently erected Santo Tomas Hospital in Panama, which hospital is on ground adjacent to that set aside for the Research Institute of Tropical Medicine of the Gorgas Memorial, and in this way patients whose cases they were studying at the Research Institute could be taken care of in the wards of the Santo Tomas Hospital.

Another point in the plan for the Gorgas Memorial Laboratory is that it was proposed that it would not only be for human beings, but that a great program for diseased animals should be a part of the laboratory to study diseases of animals in the tropics. Mr. Wellcome spoke of the prevalence of human sleeping sickness in Uganda, Africa, with 200,000 deaths from sleeping sickness, but the devastation in human beings is hardly comparable to the death rate in cattle. They have a parasite which causes human sleeping sickness which is spread by the tse-tse fly, and in the same region they have another fly of the same species which transmits human sleeping sickness that affects the cattle of that region in Uganda and wipes them out. You can see that in the laboratory of the Gorgas Memorial there would be activities for the study of both human and animal life.

Mr. Fish. Have they invented anything to prevent sleeping sickness of animals?

Admiral Stitt. It is the same proposition as far as this is concerned as the tse-tse fly, but another species of it.

Mr. Fish. Have they invented a preventative?

Admiral Stitt. They have tried all kinds of things. They have tried to get at the habitat. The tse-tse fly gives birth to a larva which bores about 4 inches under the ground and becomes a pupa; and they have tried to kill these pupae by cutting away all the jungle growth, but this underbush grows up so quickly that it gives them the shelter that is necessary for the development of this fly. They have tried to handle it by certain traps, to trap the flies, but it is almost an impossible problem. Dealing with the tse-tse fly, which Mr. Wellcome and Doctor Crile spoke of in their experience in the tropics, is such a task that they almost throw up their hands because of the difficulty of controlling the fly. It transmits sleeping sickness in human beings and in cattle a disease called by another name, nagana.

The question has been asked, how this question of tropical research concerns us in the United States. In lecturing on tropical diseases, I have often said to the classes, "Gentlemen, they talk about India and the Philippines and various countries of Africa, and South

America as being countries where tropical diseases are prevalent. As a matter of fact, our own Southern States held their own in prevalence of some of these. Yellow fever is wiped out from the Southern States but we still have dengue, or breakbone fever transmitted by the same mosquito that transmits yellow fever. We have dysentery, pellagra, and probably sprue that is so prominent in Porto Rico, and there is filariasis around Charleston, S. C., so that we have probably numerically as many of these tropical diseases as any other country, but qualitatively they do not amount to so much, and, of course, hookworm disease is prevalent."

The idea prevails that this does not concern the North, but read the history of yellow fever and you will find one of the most dramatic epidemics of yellow fever that has ever occurred in the world was in Philadelphia. Doctor Rush, so often spoken of as the father of American medicine, was the first one to study dengue or breakbone fever in Philadelphia, but our Northern cities now are more or less free of certain of these diseases.

Mr. THATCHER. What do you think about the value of Panama as an ideal site for this laboratory work?

Admiral STITT. The great point in any central laboratory is its accessibility, and, of coures, I suppose no place is more accessible to-day on account of the Panama Canal than Panama.

Mr. FISH. Do you limit that to Panama, the Republic or the zone or both?

Mr. THATCHER. I am speaking of the Isthmus of Panama in contact with the canal. Our interest in the canal has a very important bearing on this subject.

Admiral STITT. Yes.

STATEMENT OF DR. HUGH S. CUMMING, SURGEON GENERAL, UNITED STATES PUBLIC HEALTH SERVICE

Doctor CUMMING. There is hardly anything left for me to say. You have heard of General Gorgas's services. You have heard of the importance of tropical diseases. The site that has been offered is a beautiful site. I have seen the Santo Tomas Hospital, a very excellent hospital, and I think that Panama is the strategic point for a research laboratory for tropical diseases. I am interested in it in two official capacities, first, because of this country and the diseases which we would like to study, and then I happen to be director of the Pan American Sanitary Bureau and consequently am interested on behalf of the 21 countries that are members of that bureau. I think it is fine that a memorial to General Gorgas should take the form of a research laboratory.

Mr. MOORE of Virginia. If you were selecting a site for memorializing General Gorgas and carrying on the work efficiently and satisfactorily in all the American countries, north and south, do you think of any place that would be more appropriate than Panama?

Doctor CUMMING. No; I think it is a very excellent place. It covers all the west coast of South America. I was down there recently. There are several diseases in Latin America which need studying. Noguchi has been doing work on some of them recently, in 1924, on these "local diseases"; at least, we thought that they were local, but in considering all of these diseases transmissible by

insects or by unknown means, I always think of one or two diseases in this country which we thought distinctly local until very recently and which we have now found are nation-wide. They were having a very severe epidemic of Malta fever in the mountains of Peru when I was down there, and we thought it was almost unknown in this country until about three or four years ago when I was asked to investigate an outbreak of the fever in Arizona, and the outcome of that is the work of Miss Alice Evans, and Doctor Lake says it is almost nation-wide. So it is with some of these diseases down there.

Now, in this matter of research, I do not think there is any danger of duplication of effort. We are now in our hygienic laboratory coordinating efforts of eight or ten laboratories in tuberculosis work, for instance. I happen to be a member of a health committee of the League of Nations. We are spending a million Swiss francs to do work upon malaria and other diseases, and it is not duplication at all. The problem is so large.

Mr. MAAS. Do you have an interchange between the laboratories so that you know what progress is being made between laboratories working on the same problem?

Doctor CUMMING. It is fairly well coordinated in some diseases and in others not. The research work really is very well coordinated both here and in Europe through Doctor White and our laboratories. The work on cancer is widely scattered. Nobody has gotten it together under one string. Generally speaking, laboratory men keep in fairly close touch with one another unofficially rather than officially.

Mr. MAAS. Would there be any unnecessary duplication?

Doctor CUMMING. I think there is no danger of it. The more men working on the problem the earlier it will be solved.

STATEMENT OF DR. ARTHUR T. McCORMACK, LOUISVILLE, KY., PRESIDENT KENTUCKY STATE BOARD OF HEALTH

Doctor MCCORMACK. Just before leaving Kentucky I had a conference with Dr. John G. South, present American minister to Panama, and he told me he had recently talked to the President and the Secretary for Foreign Affairs of Panama. He felt sure that they contemplated beginning erection of this structure on the assurance that the United States would take part in its maintenance, so that they would be assured of its continued maintenance.

Let me talk to you a moment about the importance of the appropriation during the preliminary period of five years, a question that some of you have raised. A few years ago I conferred with Henry Ford who completed the building of a great hospital at Detroit. When Mr. Ford contemplated a departure from routine hospital construction and administration he got a group of medical men who had experience in hospital administration and asked them to secure for him two hospital administrators for his staff, and when they had secured those two men he got the rest of the staff together. Afterwards he called them all in consultation and told them he wanted each of them to draw up the plan that he wanted for his part of the hospital. Somebody suggested that the first thing to do was to get an architect. He said, "That is the trouble with hospitals. They were built by architects. Now, after you doctors have decided what

you want, what facilities you want, we will have architects and other building experts come in and build the things you need."

In the same way it is extremely important that in laying out plans for the proposed laboratory that if the staff can be organized to familiarize themselves in so far as necessary with the laboratory facilities, they will be better able, economically and efficiently, to devise plans for a building in Panama which will enable them to conduct it most economically.

When I came to Washington during the war I had organized a hospital of my associates in the profession in Kentucky and expected shortly to be sent to France, but General Gorgas detached me from that hospital, saying there were many surgeons, but there were few men who had devoted themselves to preventive medicine. After a short time he came to my office in the Mills Building, where I had the privilege of working with him, and told me that he was going to ask me to go down and take charge of his work in Panama because Regular Army officers who were there were greatly needed in administrative work here and in France, and he wanted to relieve them as rapidly as possible.

He told me that he considered the sanitary problem of Panama as one of the most important things, not only in the winning of the war but in the progress of the world after the war; that there had been demonstrated, in a small way, all the things that were necessary to add to the measure of human life and to increase, immeasurably, the efficiency and the happiness of the human race; that there had been developed the principles which, when generally applied, would mean that during the last 25 or 30 years of their lives, men and women would not merely be unwelcome boarders with their relatives, but during the last years of their lives would be just as happy and useful as they would during the earlier years, having added experience and wisdom with their increasing years.

He said that at Panama I would find a splendid organization, and it was ideal in principle; that practically every disease known to humanity, and not only that but all that vast number of diseases which are still unrecognized, would be passing under our supervision from time to time, and we would be met with all those complex problems arising in connection with public health work in the Canal Zone, upon which the security and lives of our armies were just as dependent as they were upon food and the other supplies that would be sent over to them.

I think the committee would be interested in one incident particularly that happened after I got down there. Upon arriving I familiarized myself, as far as practicable, with administrative procedure and with what happened, for example, when a man telephoned to the sanitary inspector of his district that a mosquito had been found in his residence.

And fortunately, soon afterwards I was fortunate enough to find a couple of mosquitoes in my house. I telephoned down to the sanitary inspector of that district, and told him there were a couple of mosquitoes in my residence at Number 39 Balboa Heights. In a few minutes a truck came up with the sanitary inspector and four or five laborers in it; and they spread themselves through that house looking for mosquitoes. And they knew just where to look. With their flashlights casting their beams behind everything that cast a shadow,

they went everywhere. And in a very short time they found these two mosquitoes. And then they looked everywhere for other mosquitoes. And they caught those two mosquitoes in a test tube, with a little chloroform-cotton in it, and, with a magnifying glass soon found what kind of a mosquito it was. They would then know whether it had bred in the house, or whether it had come into the house from the outside. This happened to be a kind of mosquito that flew against the wind, and always bred in shallow wet places on the ground. That meant that there was such a place somewhere near my house.

And after a few minutes, another truck came up with more men and equipment, and they went over the wire screening of the entire house; and they found two or three openings that the mosquitoes could get through, and of course they closed those up so that no more could get in.

But they did not stop there. The original inspector had gone back on his motor cycle, which was on the truck, and had come back and brought with him a special map of the neighborhood; and knowing that these mosquitoes flew against the wind, and knowing the direction of the winds for the few days preceding that, he knew that these mosquitoes had come from a certain direction; and so those men branched out in that general direction, going to every place on the map where there had ever been a spring or water in a sewer pipe, or anything else of that kind that may have sprung a leak. They continued that work on the following day, and on the second day they found a little place where a water pipe had a very small leak causing a little wet place, where these mosquitoes could leave larvae.

Now, these particular mosquitoes carried no disease. But the importance of the careful attention to detail in carrying on to perfection the work of that organization we can realize when we apply it to our great cities; and we can understand very readily from the perfection of that organization, why the death rate of Panama is half that of the 10 best rates in the United States; and the rate of sickness in Panama is about one twenty-fifth of that in this country.

And it seems to me, Mr. Chairman and gentlemen, that, in the memorial to the man who was probably not only the greatest administrator the world has yet known in sanitary measures, but a man whom all of us who knew him learned to love better than any other great administrator, because his great heart and soul were so much in his work that he inspired all of us who came in contact with him with a desire to carry on in the same way that he had so nobly done—if by creating such a memorial that spirit can be preserved for American medicine, and can be put in a temple where it can be from day to day carried on by the young men who come and the older men who will go through there, it seems to me that it will be one of the greatest contributions that this great country of ours could make.

And it seems particularly fitting, Mr. Chairman, to one familiar with the record as I have found it necessary to become—it seems particularly fitting that this bill should have been introduced by his former colleague in the government of the Canal Zone, Representative Thatcher; because his work might have been impossible had it not been for the sympathy, the support, and the diplomatic ability of Governor Thatcher, who, with General Gorgas, and with their wives acted as unofficial representatives, predecessors, we might say,

of Lindbergh in his noncommissioned capacity as ambassador—who with their perfect Spanish carried the spirit of America into the hearts of the people of Panama, and not only to the people of Panama, but to the people of South America.

And I believe no other influence has ever been greater in acquiring the love and confidence of those people than the influence of these two statesmen who represented America on that frontier at that time. And if we can preserve that sort of spirit of service and carry it on from there into the countries of South America, I think that we can confidently count on their support. I saw during the war our allies constantly going through the canal. We had almost every night the privilege of entertaining the Premier or the Foreign Secretary, or the President, or the President elect of some one of the South American Republics. And without exception, they paused to pay a tribute to the memory of General Gorgas whom they all considered as much their patron saint to whom they paid tribute for obtaining the high degree of health that was possible for their several countries, as they considered Henry Clay their benefactor, and it pleased me very much as a Kentuckian, their paying tribute to him for helping them to obtain their political freedom.

I want to tell you of one instance particularly that occurred while I was there. Doctor Noguchi, of the Rockefeller Institute, came down there on his way to Guayaquil, Equador, where he was going to make a search for the germ of yellow fever. He was there for about two days; and I had the privilege of taking him around and showing him the conditions in Panama. And I found that Doctor Noguchi was personally familiar with more bugs that I had not been introduced to before than I had ever known existed. And I took him through the wards of Santo Tomas Hospital. A young American interne took us through the 18 beds in the women's ward—and there were 16 different rare diseases in the 18 beds. And Doctor Noguchi, enthusiastic Japanese as he is, turned to me and said, "Colonel, why should such an institute for research have been founded by Mr. Rockefeller in the North where we must grow all the germs we want to study in vitro (in glass), when we could have come to Panama, where we would have found everything growing in vivo (in people)." [Laughter.] It was a very dramatic thing, and illustrates the importance of the location of this institute at the perfectly wonderful site at Bella Vista; it being immediately adjacent to the new and very perfect Santo Tomas Hospital will give it the opportunity for studying and observing not only the things that will be done in the laboratory itself, but also for human contacts across the street, which will help its work.

Mr. THATCHER. And very near the hospital.

Mr. MCCORMACK. Very near the hospital; and only a stone's throw across to the Canal and our great Ancon Hospital. I had the pleasure of finding out, since as chief health officer of the Canal Zone I was also chief health officer of the Republic of Panama, that in the Republic of Panama there is almost every disease that is yet known, along with a vast number that are not yet known. There is certainly the opportunity there for endless, boundless research.

We had one incident there, Mr. Chairman, that you will probably be interested in: When General Gorgas sent down to me

Doctor McFarlan as pathologist I found him a most interesting man. And when he arrived he told me that he was profoundly dissatisfied. "This climate is getting on my nerves. But the thing that has got on my nerves most is that I caught a black dog the other day, and I shook him, and there were 40 different kinds of ticks on him—and I knew only seven of them." [Laughter.] That is one of the boundless opportunities for research. And we found that sort of thing happening almost daily.

One of the important problems that presented itself to me is indicative of the opportunities, not only the health opportunities, but the economic opportunities, that are before us. On the ship going down from New Orleans a prominent Panaman was on board who had brought 20 head of Holstein cattle which he had bought in Texas; he had bought the heavy Holsteins for dairies—and they were the most miserable looking lot of animals I ever saw. And I asked him why he purchased this particular lot of animals when he could have bought good ones; and he said it was because they all had Texas fever, and therefore would not die with it when they got down to Panama. And if they did not give a pint of milk a day apiece, that did not make any difference; they would live down there and would not die of the Texas fever.

And one of the things that he called attention to was the possibility, which Doctor McFarlan's researches soon made practicable, of the inoculation of our northern animals for Texas fever, so that they would not contract the disease; whereas theretofore when cattle were shipped to South American countries they would do so. And in that way we had been deprived of an enormous market for breeding animals; but it will now be possible for the dairies of New York, or Wisconsin, or any of our other dairy States, to inoculate animals and ship them there. That is only developing slowly now, but it means in the future millions of dollars to our dairy men and cattle breeders for our breeding stock, and means an untold food supply for the world.

Mr. TEMPLE. This inoculation against disease in those animals has a direct effect on human life?

Doctor MCCORMACK. Yes.

Mr. TEMPLE. Because the animals have a direct effect upon our food supply?

Doctor MCCORMACK. Absolutely.

Mr. THATCHER. With regard to the question of double expense in the proposed laboratory, would that question be involved at all?

Doctor MCCORMACK. Not at all. The laboratory men of the world are a choice group of people, unorganized and rarely known to each other. They are shy like orchids, which grow where it is difficult to find them. And among themselves they have a species of speech or a form of communication—just like we have in our mountains of Kentucky, where, if a revenue officer comes along, they learn about it far enough in advance to get out of the way any visible evidence of the production of those things which are prohibited and are considered very undesirable, and the evidence is very rarely found.

In the same way these laboratory people seem to sense the thing they are doing, and they keep up a form of general emulation and at the same time general cooperation. None of them ever deny the

steps of progress that are made by others from time to time; and while each of them, of course, is eager that his name may go down as the name of some one of these infinitesimal germs or new ticks or one thing or another; while he hopes that this will happen to him, he is very glad if it happens to one of the other men doing this work; and there are too few of them, because we have been so niggardly in the past, because we have only begun to realize the importance of this work. I think there is no reproach to any government for being so slow in recognizing the importance of such developments, because it is only some 60 years ago that any of them began; and we all have begun so recently; and in public health matters it is naturally difficult for you gentlemen to begin to expend the large sums of money which are intrusted to your care for the development of the secrets of nature along the lines that are so fundamental to the preservation of the race.

Mr. THATCHER. If there are no further questions, Mr. Chairman, I will ask permission to file for the record the address made by the former President of the Republic of Panama, Dr. Belisario Porras, at the time of the laying of the corner stone of the Gorgas Memorial Institute. That shows the spirit of the Panama Republic at that time.

Mr. TEMPLE. Without objections, that will be inserted in the record at this time.

(The statement referred to is as follows:)

LAYING OF THE CORNER STONE OF THE GORGAS MEMORIAL INSTITUTE OF TROPICAL AND PREVENTIVE MEDICINE ADDRESS—BY PRESIDENT PORRAS

I experience profound satisfaction from the fact that it is my privilege to lay the corner stone of the Institute of Tropical Medicine which Panama dedicates to William Crawford Gorgas, to perpetuate his memory here, on the shores of the murmuring Pacific and in close proximity to that thoroughfare which—hurriedly in former days as though pursued by the phantom of death and lingeringly to-day as though regretting the brevity of time which compels them to forego the delights in our benign and even climate, the beauty of our country's unchanging verdure and the incomparable blue of our sky—has been used by men of every nationality for whom Gorgas cherished only sentiments of deep humanity which prevailed always over every prejudice of race, nationality, birth, or class.

This sense of satisfaction that I experience now is derived primarily from the fact that I was a friend of this man to whose memory we are to-day assembled here to pay tribute, and as such, I was in an admirable position to judge fully the purity of his noble and good heart; and, further, being one of the old men of the days when he lived in our midst, I am better able to appreciate more fully than the men of the younger generation, the great work of health, life, and happiness which this great man accomplished for my country.

The monument which we will erect here will be an expression of Panama's gratitude to the man who proved beyond the peradventure of a doubt that the Tropics could be made habitable for all the races of the earth. We are indebted to the genius of Gorgas for the transformation of Panama from a fever-ridden land to the Paradise we now live in. Therefore, we consider that Gorgas, to a certain extent, belongs to us also, because it was here he saw his great effort to lighten the burden of suffering humanity crowned with success.

It is the privilege of great men, sages, discoverers, heroes and martyrs, whose activities, teachings, and examples are not circumscribed to the narrow confines of the land of their birth, and whose achievements in the world have been beneficial to the majority, if not to all their fellow-beings, to be universally loved. Such men—and Gorgas was one of them—can not be citizens of one particular city, town, or village, for every city and every nation of the earth claims them; they are the real citizens of the world.

As in the case of Aesculapius, when it was found necessary to enlist the services of an oracle to determine in which of the cities of ancient Greece which disputed this honor, was his birthplace, and, as in the case of Christopher Columbus,

who has been declared an Italian, a Spaniard, and more recently a Jew, the birthplace of Gorgas, I am informed, is disputed, both Alabama and Georgia claiming this honor. However, Gorgas does not belong exclusively to the United States of North America where he was educated. Cuba and Serbia, Bulgaria and Ecuador, Panama and South Africa, all have claims to him as a result of his having lived and worked among them for the good of the human family.

The work accomplished in the world by the great Gorgas is immense, immeasurable. Of Hippocrates it may be said that he was the first to divorce medicine from witchcraft and the ecclesiastical mysticism of his times; of Galen, that he was a great physician and writer to whom is attributed the authorship of about 500 books intended to popularize the practice of medicine; of the great Pasteur, de Kock, Ramon Cajalyy Cajal, Ehlriej, Finlay, and Rose, that they penetrated far into the hidden secrets of the invisible, the infinitesimal world; of Metchnikoff, that he evolved the famous phagocyte theory and with Roux, Chamberland, and Calmette, collaborated in and continued the work of the great Pasteur; but how can we describe Gorgas, who solved the apparently impossible problem of making the Tropics habitable, thus complementing the marvelous work of God who created us in order that we might live on this terrestrial globe and be happy on it? Gorgas destroyed the morasses of death and gave us pure drinking water and purified the air of our exuberant tropical forests and our colonial cities. Gorgas redeemed the Tropics.

I can still remember, and it seems to me a horrible nightmare, the time, 50 years ago, when, on my way to Bogota to finish my studies, I found it necessary to spend a night in Colon. Sleep during that night was impossible for me because of the constant and tormenting bites of the mosquitoes, the incessant buzzing of which smote on my ears as though they were the discordant notes of an infernal serenade. These minute tormentors were so numerous that by clutching at the apparently empty air I caught handful after handful of these tormenting pests. Neither can I forget conditions as they prevailed when I returned from college 10 years later and entered the employ of the French canal company. From that time I was able to realize, or at least suspect, the underlying cause of the Frenchmen's failure in their attempt to construct the trans-Isthmian waterway. They constructed beautiful residences and tree-lined avenues and admirably organized their offices; but they did nothing, in fact they knew nothing, about tropical sanitation, and apparently never suspected its worth.

In those days of long ago, it was the most natural thing for one to promenade the city's thoroughfares holding a handkerchief to one's nostrils, to keep out or lessen the stench contaminating the air as a result of decaying vegetation, stagnant or putrid puddles, and primitive or defective sewerage. On every hand one encountered well-beloved friends hastening home in the grip of malarial chills or some other equally pernicious fever; or encountered on every street, people clothed in the somber black garb of mourning with the marks of grief and despair deeply impressed on their features; or daily heard the lugubrious tolling of church bells announcing the death of a friend or a relative; or was frequently summoned to attend the last rites of a departed friend laid low by the deadly miasmas of our unsanitary tropical homeland.

However, thanks to William Crawford Gorgas, those days have passed never to return, and our tropical home has become one of the world's health resorts.

In the days of ancient Greece, shrines and temples were erected in the mountains and at the springs of health in honor of Aesculapius, the god of medicine. To these places of worship and thanksgiving an endless stream of sick and afflicted persons came to offer sacrifices and deposit votive tablets on his altars. And it is a temple such as these that we will erect here as a living testimonial to the memory of the man who brought so much comfort to the Isthmian family and the tropical world in general.

On this first stone, there will arise a great temple dedicated to this great man, and to this shrine of Gorgas will come in a never-ceasing pilgrimage, not only our sick compatriots, but also the afflicted thousands from other points of the Tropics to seek health with undying faith in the name of Gorgas. And they will depart hence for their distant homes, healed and happy, with tears of gratitude in their eyes and blessing our beloved country and the great and humane work of William Crawford Gorgas, the benefactor of humanity and the redeemer of the tropical world.

Mr. THATCHER. I would like to have inserted also the response made by Dr. Franklin Martin at the time.

Mr. TEMPLE. That may also be inserted in the record.

(The statement referred to is as follows:)

It is fitting that we, surgeons from Canada and from the United States, many of whom served in the uniform of our chief, traveling to pay our respects to the Central and South American countries, should assemble with our families and yours in this garden Paradise to honor the memory of William Crawford Gorgas, whose genius brought to it its worth, its beauty, and its charm.

Gorgas, simple in character, a lover of men, with a vision of the fundamentals of the intricate discoveries of science, by the simple application of a formula conceived by him, wrought a miracle that for all time will enrich the world, as Lister revoluntionized surgical progress from the discoveries of Pasteur, and as the lowly Nazarene brought forth from the wisdom of the prophets His pronouncement that Christianized the world.

We, assembled here, are the apostles of Gorgas, brought together by our mutal admiration for him, to build on this place a monument that will be to us and to all people a sympol of his greatness, and that will enable his devoted followers to continue his work as he himself would have desired. It can not add one iota to the monument that he created in his modest way, by his honest character, his gentle persistency, his unostentatious industry, and his enduring patience.

For, in 1 century, in 10 centuries, or in 20 centuries, it will be known that it was in this little country between two seas, that he went about and did his work, and citizens of great commonwealths of the future, on the Orinoco, on the Amazon, on the Ganges, and in all the Tropics of the earth will tell how Gorgas was their savior; how he brought to them a physical blessing that transformed their regions from the lands of death to the living communities of civilization; and it will be remembered then, in those far off days, that we, his contemporaries, loved him and sought to honor him.

President Porras, you know, and I know, how our friend loved this, his beloved Isthmian country, and how, in the evening of his life, when upon him rested the enormous responsibility of presiding over a great corps of the greatest war, in his moments of contemplation, his vision was turned toward Panama, the place which was selected by him to be his final earthly home when retirement should come. And we, here gathered to pay tribute to him, the great benefactor, may be assured, if the screen is not too impenetrable, that around us, in approbation, is his genial presence in spirit, and over us is shed his love and his benediction.

Mr. THATCHER. And then may I also have inserted in the record the bill which passed the Senate? It is short; and the present bill which is pending before you has been drawn after further study in behalf of the institute, and it is believed to be a little more in detail and to cover, probably, the situation a little more fully.

Mr. MOORE. Is there any material difference.

Mr. BLOOM. Well, there is an amendment, is there not?

Mr. THATCHER. Yes, as to the bill before you; that is in the record. The details of the present bill are a little fuller because I did not believe that the old bill was quite full enough in its provisions; and after discussing it with the representatives of the Gorgas Memorial Institute, it was thought better to elaborate it a little and make it a little clearer.

Mr. MOORE. There is no substantial difference?

Mr. THATCHER. No; it is in principle just the same, and the appropriation sought is the same. And I suppose we may have the privilege, Mr. Chairman, of reading over our testimony and making such revision and correction as may be desirable?

Mr. TEMPLE. Yes, certainly; that is a privilege that is always accorded.

Mr. MARTIN. Mr. Chairman, Representative Stobbs of Massachusetts desired to attend this hearing but was unable to be here to-day; but he wished to be recorded as being in favor of the bill.

Mr. THATCHER. May we include, Mr. Chairman, if they become available in time, the statements of Admiral Grayson and Dr. Herman N. Bundesen?

The CHAIRMAN. Without objection, they may be inserted in the record.

Mr. THATCHER. I wish to thank the members of the committee.

Mr. TEMPLE. We arranged these hearings for witnesses who knew what they wanted to say, and they have covered the subject thoroughly.

Mr. THATCHER. I want to say this in conclusion: That you gentlemen know the purpose for which the bill is intended. There is no pride of authorship involved; and if you can by changing the phraseology, make it better, I hope you will do so; and I will be very glad to consult with anybody on that subject if it is so desired.

(The following additional material was submitted by Mr. Thatcher for the record:)

STATEMENT OF CONGRESSMAN GEORGE RUSSELL STOBBS, FOURTH DISTRICT, MASSACHUSETTS

I wish to be recorded as earnestly supporting H. R. 8128. I have received communications from a number of very eminent physicians and surgeons who heartily indorse the measure and its purposes, and I trust that the committee may see its way clear to report the bill favorably and that it may be enacted into law.

TELEGRAM FROM DR. IRVIN ABELL, OF LOUISVILLE, KY., EMINENT SURGEON, AS FOLLOWS

H. R. No. 8128 is a humanitarian measure, one designed to further public health as well as to establish better relations with Latin America.

STATEMENT OF HON. LOUIS T. M'FADDEN, OF PENNSYLVANIA

I am deeply interested in the work proposed by H. R. 8128, a bill to authorize a permanent annual appropriation for the maintenance and operation of the Gorgas Memorial Laboratory.

I believe that this measure is meritorious from every standpoint. By means of the small annual appropriation involved the great work General Gorgas performed on the Isthmus of Panama, which made possible the construction of the canal there, will be carried on through the years to come. This will not only result in further protection to the canal and our interests there, but will also serve the world at large. The multiplied contacts which our own country has with the countries of the Tropics by virtue of the Panama Canal, and increased agencies of transportation generally, render the work of the proposed Gorgas Memorial Laboratory an invaluable one to the people of the United States from a protective standpoint. It is well known that many malignant diseases indigenous to the Tropics can be transmitted to the temperate zones, and this fact emphasizes the great value of the proposed laboratory in the heart of the Tropics, at the point of the greatest danger from disease, where intensive study and research may be made of the causes and prevention of every form of disease, particularly those that are now considered peculiar to the Tropics.

Since the Isthmus of Panama was the scene of the greatest sanitary work of General Gorgas, it would seem to be especially appropriate to give his name to the proposed laboratory.

I trust that the bill may be favorably reported, and thereupon enacted into law.

MEMORANDUM AS TO CERTIFICATE OF INCORPORATION OF THE GORGAS MEMORIAL INSTITUTE (INC.)

Corporate name: The Gorgas Memorial Institute of Tropical and Preventive Medicine (Inc.). Incorporated under the laws of Delaware.

Names and addresses of persons, signing certificate or articles as incorporators Belisario Porras, former President of the Republic of Panama.

José E. Lefevre, former charge d'affaires of the Republic of Panama at Washington, D. C.

Merritte W. Ireland, Surgeon General, United States Army, Washington, D. C.

Edward R. Stitt, Surgeon General, United States Navy, Washington, D. C.

Hugh S. Cumming, Surgeon General, United States Public Health Service, Washington, D. C.

Leo S. Rowe, Director General Pan-American Union, Washington, D. C.

Dr. Franklin Martin, director general American College of Surgeons, Chicago, Ill.

William C. Braisted, rear admiral, United States Navy, Washington, D. C.

Hon. John Bassett Moore, New York City.

Purpose, powers, and scope of the work of the Gorgas Memorial Institute: See second, third, and fourth paragraphs, or sections, of certificate of incorporation, as follows:

"Third. The nature of the business and the objects and purposes proposed to be transacted, promoted, and carried on, are to do any or all of the things herein mentioned, viz:

"To conduct, assist, and encourage investigations in the sciences and arts of hygiene, medicine, and surgery and allied subjects, in the nature and causes of disease and the methods of its prevention and treatment, and to make knowledge relating to these various subjects available for the protection of the health and the improved treatment of disease and injury, particularly as applied to tropical and preventive medicine. It shall be within the purposes of this corporation to use any means to those ends which from time to time shall seem to it expedient, including research, publication, education, the establishment and maintenance of charitable or benevolent activities, agencies or institutions appropriate thereto, and the aid of any other such activities, agencies, or institutions already established or which may hereafter be established.

"The corporation shall have the power to acquire by grant, gift, purchase, devise or bequest, either absolutely or in trust, and to hold, mortgage, convey and dispose of such property, real or personal, situated or being within or without the State of Delaware, as the purpose of the corporation shall require, without limitation as to amount, location or value; to accept and administer any trust of property, real or personal, wherever situated, for any purpose within the objects of the corporation; and to prescribe by by-laws or otherwise the terms and conditions upon which property, real or personal, shall be acquired or received by the said corporation.

"The corporation shall also have power to build, purchase, improve, enlarge, equip, and maintain laboratories and other buildings within the Republic of Panama and elsewhere necessary or appropriate for its work; to own and operate land and buildings for the breeding, raising, and keeping of plants and animals to be used for its purposes; to furnish treatment for diseases of man and of animals, and to provide and maintain all necessary equipment therefor; to conduct and assist such scientific experiments or investigations upon plants or animals as may be necessary or proper for carrying on its work of research; to appoint committees of experts to direct special lines of research; to aid, cooperate with, or endow other associations or corporations engaged in similar work within the Republic of Panama or elsewhere; to aid and cooperate with investigators in its own laboratories or elsewhere; to collect statistics and information, and to publish and distribute documents, reports, and periodicals; to carry on such educational work along the lines of its corporate purposes as it may deem wise; to provide for and furnish public instruction in hygiene, sanitation, and the laws of health; to conduct lectures and hold meetings; to acquire and maintain a library; to erect and maintain museums; and in general to do and perform all things necessary or convenient for the promotion of the objects of the corporation or any of them.

"To do any or all of the things herein set forth to the same extent as natural persons might or could do and in any part of the world, as principals, agents, contractors, trustees, or otherwise, alone or in company with others.

"Fourth. The corporation shall have no capital stock and the conditions of membership shall be as follows:

"Members of the corporation shall be those elected to membership by action of its board of directors or by action of its members, at their respective meetings, in accordance with the by-laws of the corporation."

Under the eighth paragraph, or section of the certificate of incorporation, it is provided that—

"No officer, director, member, or employee of said corporation shall receive, or shall be lawfully entitled to receive, any pecuniary profit from the operation therefor, except reasonable compensation for services in effecting one or more of its corporate purposes."

[S. 5449]

A BILL To authorize a permanent annual appropriation for the maintenance of the Gorgas Memorial Laboratory

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is authorized to be permanently appropriated for each year, out of any money in the Treasury not otherwise appropriated, the sum of $50,000, to be paid to the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated, for the maintenance of the Gorgas Memorial Laboratory, upon condition (1) that the Republic of Panama complete the construction of such laboratory upon the site donated by such Republic for the Research Institute at Panama of the Gorgas Memorial Institute of Tropical and Preventive Medicine, (2) that South American and Central American governments contribute annually, for the maintenance of such laboratory, sums equaling in the aggregate one-half the annual appropriation authorized by this act, and (3) that the United States be represented permanently on the board or council directing the administration of such laboratory on an equality with the South American and Central American governments contributing to the maintenance of such laboratory. The Gorgas Memorial Institute of Tropical and Preventive Medicine shall make a full report to Congress on the first Monday of December of each year as to the administration of the Gorags Memorial Laboratory.

NOTE.—This bill passed the Senate at the last session, but too late to be considered in the House.

[Cablegram to Toronto (Canada) Daily Mail and Empire of January 30, 1928]

FRANCE TO COMBAT SLEEPING SICKNESS—EXPEDITION CALLED FOR TO ENTER FLY-INFESTED AREA

PARIS, January 29.—The organization of a great expedition to fight sleeping sickness in French equatorial Africa was announced yesterday by the Government. Thirty-three French physicians and scientists, functioning through the Pasteur Institute, will devote five years to combating the disease and attempting to rid the colonies of the fatal tsetse fly.

Accompanying the decree authorizing the expedition was a letter from Leon Perrier, Minister of Colonies, to President Doumergue, declaring that the present conditions in Africa made necessary special efforts to stamp out sleeping sickness above all other diseases.

The minister said sanitary conditions had become worse, due to the concentration of native labor in connection with railroad building. He suggested that, owing to the hazardous nature of the task and the length of service necessary, special awards be offered to those who volunteer. This was provided in the decree issued by the President. M. Perrier said he had suggested the expedition after consultation with the Pasteur Institute and that the director of the institute's branch at Brazaville had named a technical advisor for the expedition. Enlistment in the expedition is open to both Army and civilian scientists.

The decree signed by President Doumergue fixes the size of the party at 10 physicians, 10 hygienists, 1 veterinarian, and 12 hospital attendants, all Europeans, and 105 natives. While the salaries are not unusually high—28,000 francs a year for the physicians and 18,000 and 13,000 for the other classes—they are offered many immunities from taxation and allowances for their families.

In addition they will be given a bonus of 10,000 francs after two years' service, 30,000 after four years, and 60,000 if they enlist for an additional two years' service. The last clause, incidentally, implies that the Government intends to keep the expedition in operation longer than the original five years mentioned in the decree.

The volunteers must pass three months in study at the Pasteur Institute in Paris or at the branch at Brazaville. They must enlist for two years' continuous service, followed by a vacation of six months, and then for another two years without interruption.

(Thereupon, at 3.30 o'clock p. m., the committee adjourned.)

House Report No. 706, Seventieth Congress, first session

GORGAS MEMORIAL LABORATORY

FEBRUARY 17, 1928.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed

Mr. TEMPLE, from the Committee on Foreign Affairs, submitted the following

REPORT

[To accompany H. R. 8128]

The Committee on Foreign Affairs, to whom was referred the bill (H. R. 8128) to authorize a permanent annual appropriation for the maintenance and operation of the Gorgas Memorial Laboratory, having considered the same, report thereon with certain amendments thereto, with a recommendation that it do pass.

Amend the bill as follows:

Page 3, line 8, strike out the words "for the fiscal year" and insert in lieu thereof the words "up to the 1st of November".

Page 3, at the close of section 3, following the words "fiscal year", in line 10, add the following: "The books and accounts of the Gorgas Memorial Laboratory shall at all times be open to examination by the Comptroller General of the United States."

The bill, as introduced, reads as follows:

A BILL To authorize a permanent annual appropriation for the maintenance and operation of the Gorgas Memorial Laboratory

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby authorized to be permanently appropriated for each year, out of any money in the Treasury not otherwise appropriated, the sum of $50,000, to be paid to the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated (hereinafter referred to as the Gorgas Memorial Institute), for the maintenance and operation by it, of a laboratory to be known as the Gorgas Memorial Laboratory, upon condition (1) that the necessary building or quarters for said laboratory shall be constructed within the five years next ensuing after this act shall become a law, either upon the site offered by the Republic of Panama therefor, at, or adjacent to, the city of Panama, or upon a site in the Canal Zone to be provided by the United States; (2) that each of the Latin-American Governments be invited and permitted to contribute annually, on a pro rata basis, according to population, toward the maintenance and operation of such laboratory, the total of such contributions not to exceed 75 per centum of the total contributed by the United States; and (3) that the United States be represented permanently on the board or council

directing the administration of such laboratory, with privilege to the Latin-American Governments contributing as aforesaid to have representation on such board or council; all such representation to be based upon, and in proportion to, the actual respective contributions made to the aforesaid maintenance and operation.

SEC. 2. That pending the construction of the necessary building or quarters for said Gorgas Memorial Laboratory there is hereby authorized to be appropriated annually, in manner aforesaid, for a period not exceeding the five years hereinbefore named, said sum of $50,000, payable to the Gorgas Memorial Institute, to enable and permit to be made the organization of the said Gorgas Memorial Laboratory, and its maintenance and operation, in temporary quarters or in any existing laboratory, in the Republic of Panama or the Canal Zone.

SEC. 3. The Gorgas Memorial Institute shall make to Congress annually, on the first Monday in December, a full report of the operation and work of the Gorgas Memorial Laboratory for the fiscal year next preceding, and shall include therewith a complete statement of the receipts and expenditures of said laboratory for such fiscal year.

PURPOSES OF THE BILL

The purposes of this measure are twofold: First, to authorize as the contribution of the United States Government thereto a permanent annual appropriation of $50,000 for the maintenance and operation of the Gorgas Memorial Laboratory, on the Isthmus of Panama; and, second, to memorialize in a vital and effective way the name of Gen. William Crawford Gorgas, who wrought such miracles of sanitation in Cuba and on the Isthmus.

I

NEED FOR RESEARCH LABORATORY ON ISTHMUS

Touching the first purpose, reference is made to the printed hearings on the bill, wherein are fully set forth the statements of various persons showing the great need and value of a research laboratory on the Isthmus of Panama to be located adjacent to, or within, the Canal Zone. There appeared before the committee in behalf of this bill, and were heard, in addition to the author of the measure, Representative Thatcher, of Kentucky, the following named, who, by reason of their scientific knowledge and wide experience, were eminently qualified to speak upon the subjects involved:

Dr. Franklin Martin, of Chicago, Ill., director general and president of the American College of Surgeons and president of the Gorgas Memorial Institute of Tropical and Preventive Medicine (Inc.).

Dr. Bowman C. Crowell, a member of the executive committee and board of directors of the Gorgas Memorial Institute, associate director of the American College of Surgeons, formerly for seven years in the Philippines engaged in medical research work, and more recently director of the Oswaldo Cruz Institute at Rio de Janeiro, Brazil.

Dr. George W. Crile, of Cleveland, Ohio, president of the Cleveland Clinic and ex-president and regent of the American College of Surgeons.

Mr. Henry S. Wellcome, of London, England, internationally known philanthropist, founder and supporter of the Wellcome Tropical Research Laboratories at Khartoum, Anglo-Egyptian Sudan,

and the Wellcome Bureau of Scientific Research, and the Wellcome Affiliated Research Institutions and Museums of London, England.

Mr. Edgar Wallace, representative of the American Federation of Labor.

Also Surg. Gen. Merritte W. Ireland, of the United States Army; Surg. Gen. Edward R. Stitt, of the United States Navy; Surg. Gen. Hugh S. Cumming, of the United States Public Health Service; and Dr. A. T. McCormack, the head of the Kentucky State Board of Health and formerly chief health officer of the Canal Zone.

The testimony adduced at the hearing was of a most interesting and impressive character, and clearly indicated, in the judgment of the committee, the important need for the establishment and maintenance of a research laboratory on the Isthmus of Panama, by means of which intensive investigations and studies may be made of tropical and other diseases and the means devised whereby they may be controlled or prevented. Such work is deemed necessary, not only because of the vital interest of the United States in the Panama Canal and the necessity for giving to the canal and its operation the fullest measure of sanitary protection; not only because of the contribution to the welfare of the human race in general such work will prove to be, but also because that work will be, as experience has clearly shown, in the highest degree beneficial and protective to the people of the United States themselves, as well as to those of our insular and outlying territorial possessions.

It has been scientifically established that many deadly diseases, once considered as only indigenous to the Tropics, may be and are carried to the Temperate Zones by various transmitting agencies, and there seem to become indigenous with no diminution of their virulence. Yellow fever constitutes a striking example of this fact. As tropical countries are opened up to increased settlement and development, as contacts therewith by the outside world are increased, the transmission of disease therefrom to the outside world must correspondingly increase. Hence, each nation in more or less degree must become the keeper of its brother nations; this, as a matter of self-protection if for no other reason.

Many of the most deadly diseases, as is well known, are transmitted by parasites, mosquitoes, beetles, and other parasitic and insect carriers. Some of the most familiar examples are yellow fever transmitted by the stegomyia mosquito; malaria by the anopholes, or common black, mosquito; bubonic plague by a rat flea; hookworm by a parasitic worm; and sleeping sickness by the tsetse fly. Because of perennial summer in the Tropics, there is no cold weather there to destroy or reduce these parasites and transmitting agencies. For this reason the tropical regions constitute the best breeding places for diseases of an infectious character, and, in consequence, the ideal locations for research institutions for these diseases are in the Tropics.

Because of the great work which has been accomplished by the sanitation of tropical regions through scientific sanitary methods, it has been demonstrated that the tropical areas of the earth may be, generally speaking, rendered wholesome and habitable for all the races of man, including the Caucasian. Until a few years ago the reverse idea was entertained. This change of thought has been induced largely, and perhaps chiefly, through the splendid results

achieved under Gorgas in Cuba, where yellow fever, indigenous there for more than 150 years, was effectually banished; and in Panama—once accounted the plague spot of the world—where, under his sanitary rule, deadly malaria was reduced to the minimum, and yellow fever, which had been prevalent for four centuries and had defeated the French attempt to build the canal, was driven out and the Isthmus rendered more wholesome, from a health standpoint, than most of our American cities. Except for the work of a Gorgas, first (1904–1907) as chief sanitary officer of the Canal Zone, and later (1907–1914) as a member of the Isthmian Canal Commission, in charge of the sanitary and health work of the Isthmus, the canal could not have been constructed and the American efforts would have failed. Also, through the efforts of the Wellcome Tropical Research Laboratories in the Sudan, remarkable results have been achieved in redeeming there extensive plague-stricken areas; and disease-ridden regions in various parts of the tropical world are gradually being brought under sanitary subjection by the application of methods evolved by distinguished sanitarians like Gorgas, Manson, Ross, and others. While this is true, a field well-nigh limitless yet remains for exploration. Looking to the future, the value of the work of ridding the tropical regions of the earth from communicable disease is beyond estimation.

There are not many institutions of research dealing with tropical and preventive medicine. There are several located in temperate regions far removed from the Tropics. The principal ones located in the Tropics are, it appears, the Oswaldo, Cruze Institute, of Rio de Janeiro, Brazil; The Wellcome Tropical Research Laboratories of Khartoum, Anglo-Egyptian Sudan; and the Columbia School of Tropical Medicine in Porto Rico.

The field of tropical medical research is so large, the needs involved so great, and the present research facilities so limited that the concensus of scientific judgment is that there appears no likelihood of exhaustion of this work for a great many years, perhaps centuries, to come. The surface has only been scratched in comparison with what is needed. Also, it is clear that there is practically no duplication of effort involved. Any discovery as to the causes of disease, or touching its prevention, so soon as properly verified, is made known to the scientific world; and the various research institutions and scientists engaged in work of like character are thus enabled to supplement and profit by the achievements of each other. Hence, the work of the proposed Gorgas Memorial Laboratory would in no wise conflict with or duplicate the work of other like institutions. Neither would it duplicate any of the work being performed in the hospitals and in the sanitary and health work of the Canal Zone. That work is along the established lines of health and sanitation methods, whereby the sick are cared for, and well-known methods of quarantine and prevention are extended and rendered more permanent; but in the zone there are no adequate facilities for intensive, far-reaching research work of the character contemplated by this measure. No appropriations are being made by Congress for carrying on such work in the Canal Zone or elsewhere.

The unmastered malignant diseases of the tropical countries—and they are legion—must therefore be studied in an intensive and exhaustive way in order that they may be brought into subjection

just as yellow fever, malaria, and other forms of communicable diseases have been brought into subjection through such study. There are also a great many diseases peculiar to animal life in the Tropics and their mastery will serve man since they affect his food supply. In a laboratory of the character proposed, studies may therefore also be made of the diseases which destroy livestock. Also, the research studies of this laboratory may properly extend to the subject of ways and means for better and more effective sanitary methods required in dealing with communicable disease and general health conditions. Because of the all-world accessibility of the Isthmus of Panama by reason of the great canal there; because of the fact that the Isthmus lies in the heart of the American Tropics; and because, also, on the Isthmus itself, there has been made the greatest progress in sanitary science known to history, it is believed that the location there, at this great focal point of international commerce, of the suggested research institution would be altogether ideal. In fact, it is to be doubted whether any spot in any other quarter of the globe could be found which might better or, indeed, as well serve the purposes of such a laboratory.

Under the terms of the bill the proposed annual appropriation of $50,000 is authorized for a preliminary period not exceeding five years, in order to permit the laboratory work to be properly organized in temporary quarters to be made available in the Canal Zone or in the Republic of Panama; and to the end that when the permanent quarters are provided, the work will be ready to be placed therein. The bill, however, is drawn so that if the Republic of Panama, for any reason, should fail to provide the permanent home for the laboratory, its location may be made in the Canal Zone on a site to be provided by the United States. The provisions of the bill are to the effect that if at the close of this five-year period, the permanent quarters are not constructed on the Panama site, the appropriations will cease, unless by the close of this period permanent quarters are otherwise made available.

THE REPUBLIC OF PANAMA

It appears that the Republic of Panama, through its President, has heretofore set apart an excellent site for the proposed laboratory building. This site is located on the Bay of Panama, just outside and immediately adjacent to the city of Panama and the Canal Zone. Immediately next to this site is the Santo Tomas Hospital of Panama, a new and thoroughly modern institution, and just a little farther removed is the great Ancon Hospital in the Canal Zone. The nearness of these hospitals would doubtless prove of great advantage in the research work of the proposed laboratory.

The testimony before the committee was to the effect that the leading officials of the Panaman Republic have given assurance that whenever provision should be made for the funds necessary to maintain and operate this laboratory, the Republic would thereupon construct on this site the required structure, or quarters therefor, at an estimated cost of $500,000 or more. In addition it appears that the Republic already has about $20,000 worth of equipment to be donated to the laboratory whenever its work may commence.

Hence, the Republic of Panama is evincing a very fine and liberal spirit in this matter. The enactment of this bill will give assurance to the officials of the Panaman Government that the United States is ready to do its part toward the work of this research institution, and will justify those officials at once to begin and push the construction of the laboratory quarters.

For the reason that other countries of Latin America will benefit from the establishment and operation of this laboratory, the bill is so drafted as to invite and permit their contribution of funds thereto, though under the terms of the measure, major representation in the laboratory's control is given to the United States, whose interests in the Panama Canal are paramount. The establishment and operation of this laboratory will not only serve in a direct way a highly beneficial purpose, but, incidentally, will promote closer bonds of amity between our own and our sister republics to the southward. The cooperation of the American nations in this research work will thus serve a double purpose.

AMENDMENTS

The amendment to the bill concerning the right of the Comptroller General of the United States to examine the books and accounts of the proposed laboratory is in line with the provision obtaining as to the expenditure of other funds appropriated by Congress, and will authorize and permit complete official check on the laboratory receipts and disbursements. This, of course, will aid in the work of wise and efficient fiscal administration. The other amendment simply changes the date of the laboratory's annual report.

THE GORGAS MEMORIAL INSTITUTE

It appears that assurances have been given by the officials of other Latin-American countries than Panama, that financial assistance will be furnished by their respective governments in the maintenance of this laboratory. Contributions to the extent of $37,500 may be received from Latin-American nations. The statements of proponents of the bill are that with the annual appropriation authorized therein, together with contributions which may reasonably be expected from the sources just indicated, there will be provided sufficient funds to pay the cost of personnel and the general operating and maintenance expenses of this work.

Also, under the terms of the bill the appropriations authorized therein for the maintenance and operation of the Gorgas Memorial Laboratory shall be paid to and expended for that purpose by the Gorgas Memorial Institute of Tropical and Preventive Medicine (Inc.), an American institution, incorporated under the laws of the State of Delaware, and having for its purpose the dissemination and popularization of health and sanitary knowledge in the United States, and the carrying on of research work in the Tropics touching the cause and prevention of disease. Its officers and directors serve without pay, it operates only for purposes of public welfare, and its health activities in the United States, now costing about $30,000 a year, and rapidly growing, are maintained by means of popular subscriptions. It has at this time no means of support except that

derived from private sources. It is officered and directed by physicians, surgeons, and sanitarians of the highest rank; and it is rendering a wide, unselfish, and effective service for our people. President Coolidge is its honorary president, Dr. Franklin Martin its active president and directing head, and on its executive committee and board of directors are those, including the three Surgeons General of the United States, who are both nationally and internationally known because of their distinction as scientists and publicists.

This organization has been named in honor of General Gorgas, whose ideas of health and sanitary extension work it is striving to put into force and effect. Full information touching the organization, purposes, and scope of the work of the Gorgas Memorial Institute may be found in the printed hearings, which are of absorbing interest.

The proposed laboratory will operate under the general supervision of the Gorgas Memorial Institute, as a phase or branch of its activities, but the United States, as already indicated, will have permanent and major representation on the board or council directing the administration of the proposed laboratory, and the laboratory books and accounts, shall at all times, be open to the examination of the Comptroller General of the United States. Thus, faithful and efficient expenditure of the laboratory funds will be assured.

II

SECOND PURPOSE OF THE BILL

In the judgment of the committee the indicated appropriation would alone be justified because of the inherent value of the proposed work. The honor which will be paid to General Gorgas by giving his name to this laboratory is another consideration involved as an added and supplemental consideration. The laboratory must have a designation; and what name is so appropriate therefor as that of the man who is generally conceded to be one of the greatest, if not the greatest sanitarian the world has ever known, "the savior of the Tropics," Gen. William Crawford Gorgas? The work of the Gorgas Memorial Institute is that which he hoped might be undertaken. The service to be rendered by the proposed laboratory is that which he hoped to see inaugurated and maintained. The Gorgas Memorial Institute was organized, and its work is being carried on by those who worked with him in the various lines of his endeavor and loved him; particularly by those who served with him in various capacities during his incumbency as Surgeon General of the United States Army, through the World War period when, under his supervision, there was assembled the finest, fittest army ever brought together in all the earth's history. Seven millions of prospective American soldiers were examined under the most careful and searching scrutiny possible, and 4,500,000 were accepted as fit for service.

The work performed by General Gorgas during an eventful and busy life entitles him to every honor that may be paid his memory. No man was less unostentatious than was he; no man could care less than did he for monuments and memorials; but it is believed by those who knew him best that his preference of a memorial, had he known that one might be erected in his honor, would be one of the character now proposed, for thereby will be carried on in a vital,

effective way the great work in which he spent his life, the great work which, for the benefit of humanity, he desired above all else to be carried on through the years to come.

Hence, it is the judgment of the committee that the proposed research institution should bear the name of Gorgas Memorial Laboratory, as the bill provides.

In conclusion, there is submitted the following:

Brief Sketch of the Life and Work of William Crawford Gorgas

William Crawford Gorgas was born in Mobile, Ala., on October 3, 1854. He was the son of Gen. Josiah Gorgas, the chief of ordnance of the Southern Confederacy during the Civil War and later the president of the University of the South, at Sewanee, Tenn. His mother was Amelia (Gayle) Gorgas, daughter of Governor Gayle, of Alabama.

Gorgas was graduated from the University of the South with the degree of A. B. in 1875 and from Bellevue Hospital Medical College with the degree of M. D. in 1879. He entered the Medical Department of the United States Army on June 16, 1880, as first lieutenant, was advanced to captain in 1885, and to major in 1898.

In 1880 yellow fever was prevalent in Brownsville, Tex., in violent epidemic form. Conditions were bad beyond the power of words to portray to those who have no recollection of conditions in a yellow-fever-stricken city prior to 1880. The Government, as well as the people at large, had been appealed to.

Gorgas, with the rank of lieutenant, volunteered to go, and went to Fort Brown, near Brownsville, to assist in the medical care of the civilian population. There he first met Miss Marie Cook Doughty, who was seriously ill of yellow fever, and whom he attended, and there he also contracted the disease. He married Miss Doughty in Cincinnati on September 15, 1885.

Later, Gorgas was in active service in Florida, in the West, in the Dakotas, and in the old Indian Territory. He accompanied the military expedition against Santiago in 1898. Fate, possibly with a purpose, visited his system with yellow fever in early life, thereby making him immune to the disease. Because of his practical knowledge of yellow-fever transmission, he was appointed chief sanitary officer of Habana, which post he occupied from 1898 to 1902.

It was in 1900 that Gorgas was in close contact with the investigation into the cause of yellow fever that was being conducted in Habana by the Walter Reed Board. The memorable discovery made by this board revealed the cause of the disease; but it was Gorgas who applied these principles and effected the eradication of yellow fever from Habana.

In 1904 Gorgas was appointed chief sanitary officer of the Panama Canal Zone, and in 1907 he was made a member of the Isthmian Canal Commission. In recognition of his work in Habana, his rank was increased to that of colonel by a special act of Congress in 1903, and he became Assistant Surgeon General of the United States Army. In 1915 Gorgas and his associates on the Isthmian Canal Commission received a vote of thanks from Congress for distinguished service rendered in connection with the construction of the Panama Canal. This is one of the few instances in history where sanitary achievement has been recognized by the State since Hippocrates was awarded a civic crown by the citizens of Athens for averting a pestilence from that city. This reflects much credit on our National Legislature as well as on Gorgas, for republics are usually unappreciative of the quiet conquests of science.

In 1913 General Gorgas went to Rhodesia, South Africa, at the invitation of the Chamber of Mines, Johannesburg, to advise as to the best means of preventing pneumonia and malaria among the native mine workers. He was appointed Surgeon General of the United States Army with the rank of brigadier general, on January 16, 1914, and was promoted to major general in 1915. He served with great distinction as Surgeon General during the trying period of our participation in the World War, until his retirement, at the age of 65, on October 4, 1918.

He never lost his interest in world sanitation. While he was stationed in the Canal Zone, he visited Guayaquil, Ecuador, and mapped out a plan for the control of yellow fever in that disease-ridden district. In 1916 he was made chief of the special Yellow Fever Commission of the Rockefeller Foundation, and spent several months in South America making surveys and laying plans for the eradication of yellow fever from localities in which it still prevailed.

After his retirement as Surgeon General he immediately accepted the assignment to direct the yellow-fever work which had been undertaken by the International Health Board of the Rockefeller Foundation. On May 7, 1920, he sailed for England, en route to West Africa, where he was to investigate the yellow-fever situation. He fell ill in London on May 30, 1920, and died on July 4, 1920. His burial was made in the Arlington Cemetery at Washington.

In London General Gorgas received great honor at the hands of the British King, who also visited General Gorgas in the hospital during the latter's fatal illness.

Concerning the death of General Gorgas we quote the following statement made at the hearings on this bill by Mr. Wellcome, already mentioned herein, whose home is in London, and who was one of the pallbearers at the London funeral ceremonies:

When General Gorgas passed away, the profoundest sorrow was expressed and manifested throughout England.

At the command of the King, and by order of the British Government, a state funeral with full military honors was accorded to General Gorgas in St. Paul's Cathedral, London, the resting place of England's greatest naval and military heroes.

This was one of the greatest and most impressive funerals in England in modern times. Representatives of the King and the royal family, the British cabinet ministers, leading statesmen, high officials and officers of the British Army and Navy, the diplomatic corps representing the great powers at the Court of St. James, and representatives of the principal medical and other scientific institutions attended and paid homage to this great man.

Hundreds of thousands thronged the streets and with bared heads reverently attested their appreciation of the lifework of this man who had contributed so much to the cause of humanity.

In speaking of the great tribute of honor and respect paid to General Gorgas by the British nation, one of the English periodicals said:

"It seems good that death should find him here, for so there came our opportunity to do a great man honour. He passed through the great door through which the sun streams into the nave of St. Paul's, and there he lay with Nelson and Wellington and all that mighty host who came this way and passed into the universe.

"They will take him to his own land, but in truth he belongs to us all. He was one of life's great helpers, for he cleaned up foul places and made them sweet, and now, as they said of Lincoln, 'he belongs to the ages.'"

For these reasons the passage of the bill is respectfully urged.

GORGAS MEMORIAL LABORATORY

PROCEEDINGS IN THE HOUSE, MARCH 28, 1928, IN REGARD TO CONSIDERATION AND PASSAGE OF "A BILL TO AUTHORIZE A PERMANENT ANNUAL APPROPRIATION FOR THE MAINTENANCE AND OPERATION OF THE GORGAS MEMORIAL LABORATORY";

AND

SPEECH OF HON. MAURICE H. THATCHER, OF KENTUCKY, IN THE HOUSE OF REPRESENTATIVES

Mr. PORTER. Mr. Speaker, I call up H. R. 8128, a bill to authorize a permanent annual appropriation for the maintenance and operation of the Gorgas Memorial Laboratory, and I ask unanimous consent that the bill be considered in the House as in Committee of the Whole.

The SPEAKER. The gentleman from Pennsylvania calls up House bill 8128 and asks unanimous consent that it may be considered in the House as in Committee of the Whole. The Clerk will report the bill.

The Clerk read the bill, as follows:

A bill (H. R. 8128) to authorize a permanent annual appropriation for the maintenance and operation of the Gorgas Memorial Laboratory.

Be it enacted, etc., That there is hereby authorized to be permanently appropriated for each year, out of any money in the Treasury not otherwise appropriated, the sum of $50,000, to be paid to the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated (hereinafter referred to as the Gorgas Memorial Institute), for the maintenance and operation by it of a laboratory to be known as the Gorgas Memorial Laboratory, upon condition (1) that the necessary building or quarters for said laboratory shall be constructed within the five years next ensuing after this act shall become a law, either upon the site offered by the Republic of Panama therefor at or adjacent to the city of Panama, or upon a site in the Canal Zone to be provided by the United States; (2) that each of the Latin-American Governments be invited and permitted to contribute annually, on a pro rata basis, according to population, toward the maintenance and operation of such laboratory, the total of such contributions not to exceed 75 per cent of the total contributed by the United States; and (3) that the United States be represented permanently on the board or council directing the administration of such laboratory, with privilege to the Latin-American Governments contributing as aforesaid to have representation on such board or council; all such representation to be based upon and in proportion to the actual respective contributions made to the aforesaid maintenance and operation.

SEC. 2. That pending the construction of the necessary buildings or quarters for said Gorgas Memorial Laboratory there is hereby authorized to be appropriated annually, in manner aforesaid, for a period not exceeding the five years hereinbefore named, said sum of $50,000, payable to the Gorgas Memorial Institute, to enable and permit to be made the organization of the said Gorgas Memorial Laboratory and its maintenance and operation in temporary quarters or in any existing laboratory in the Republic of Panama or the Canal Zone.

SEC. 3. The Gorgas Memorial Institute shall make to Congress annually, on the first Monday in December, a full report of the operation and work of the Gorgas Memorial Laboratory for the fiscal year next preceding, and shall include therewith a complete statement of the receipts and expenditures of said laboratory for such fiscal year.

With the following committee amendment:

On page 3, line 7, strike out "for the fiscal year" and insert in lieu thereof "up to the first of November"; and in line 10, after the word "year," insert "the books and accounts of the Gorgas Memorial Laboratory shall at all times be open to examination by the Comptroller General of the United States."

The SPEAKER. Is there objection to the consideration of the bill in the House as in Committee of the Whole?

There was no objection.

Mr. THATCHER. Mr. Speaker, I wish to make a brief statement about the purposes of the bill. It provides for an authorization of an annual appropriation of $50,000 to be paid to the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated, for the purpose of maintaining the work of a tropical research laboratory on the Isthmus of Panama.

The Gorgas Memorial Institute of Tropical and Preventive Medicine is incorporated under the laws of Delaware. It has no capital stock and is a purely philanthropic institution, the honorary president of which is the President of the United States, Mr. Coolidge. It is carrying on a great work in this country in supplementing the public health, and other health and sanitary activities of the country through funds made up by private subscriptions and contributions. Also it has in view the establishment of a tropical research laboratory in Panama, where research work may be carried on along the lines contemplated by the great sanitarian, Gen. William Crawford Gorgas, during his great work on the Isthmus. The Gorgas Memorial Institute has been organized by the advisers and coworkers of General Gorgas during the World War, when he was Surgeon General of the United States Army.

The Republic of Panama has donated a very valuable site for this laboratory work and for the construction of a laboratory building. Also two Presidents of the Republic of Panama have made a pledge to the extent of their ability to make it that the Republic of Panama will construct the laboratory building for this purpose, at a cost of something like $500,000 to $700,000. I am thoroughly familiar with the site, which is near the city of Panama, adjacent to the great Santo Tomas Hospital, built by the Republic of Panama at a cost of three and a half million dollars; and it is also near the great Ancon Hospital in the Canal Zone. The Republic of Panama has also purchased $20,000 worth of equipment for laboratory purposes, which is now available for this laboratory work.

The bill is twofold in its purposes: First, the inauguration of tropical research work on the Isthmus of Panama; and, second, the memorialization of Gen. William Crawford Gorgas on the Isthmus, whose work there made possible the construction of the canal.

Section 1 authorizes an annual appropriation of $50,000 a year as the contribution of the United States toward the maintenance and operation of a tropical research laboratory on the Isthmus of Panama, conditioned: (*a*) That the necessary building or quarters therefor, within five years next ensuing after the bill may become a law, shall be constructed, either upon a site which has been offered therefor by the Republic of Panama, or upon a site in the Canal Zone to be provided by the United States; (*b*) that each Latin-American Government be invited and permitted to contribute annually, on a pro rata basis, according to population, toward such maintenance and operation, the total of such Latin-American contributions not to exceed 75 per cent of the total contributed by the United States; and (*c*) that the United States and the others contributing be represented on the board or council directing the administration of such laboratory; all such representation to be based upon and in proportion to the actual respective contributions so made by them.

Section 2 authorizes, pending the construction of the necessary building or quarters for such laboratory, the like annual appropriation of $50,000 under terms of contribution by our own and the Latin-American countries similar to those indicated in section 1, thereby permitting the organization and the maintenance and operation of such laboratory work in temporary quarters, or in any existing laboratory in the Republic of Panama, or the Canal Zone.

These sections provide that the funds appropriated under these authorizations shall be paid to the Gorgas Memorial Institute of Tropical and Preventive Medicine, for the purpose of maintaining and operating such laboratory.

Section 3 provides that the Gorgas Memorial Institute shall make to Congress annually on the first Monday in December full report of the operation and work of the Gorgas Memorial Laboratory up to the 1st of November next preceding, and shall include therein a complete statement of receipts and expenditures of the laboratory for such fiscal year. This section also provides that the books and accounts of the Gorgas Memorial Laboratory shall at all times be open to examination by the Comptroller General of the United States.

Full hearings were had upon the bill before the Foreign Affairs Committee. Some of the most prominent medical and sanitary experts and scientists in the entire country were present, and one very distinguished gentleman from abroad, Mr. Henry S. Wellcome, who founded and helps to maintain the world-famed Wellcome Tropical Research Laboratories at Kharoum, in the Anglo-Egyptian Sudan, and founder of research laboratories and a medical museum in London, England, was also present at the hearing and gave testimony of a most dramatic and interesting character in behalf of this measure. All these distinguished men testified, as well as did also the president of this organization, the Gorgas Memorial Institute, Dr. Franklin Martin, who is also director and president of the American College of Surgeons. Doctor Martin is giving his time and money to this great work. Also there appeared before the committee the three Surgeon Generals of the Army, the Navy, and the Public Health Service, Generals Ireland, Stitt, and Cumming. Also, the following named were heard in behalf of the measure, and aided in demonstrating in most convincing manner the great need for the enactment of the bill, namely:

Dr. Bowman C. Crowell, Chicago, Ill., member of executive committee and director Gorgas Memorial Institute; associate director American College of Surgeons; recently director Oswaldo Cruz Institute for Tropical Diseases, Rio de Janeiro.

Dr. George W. Crile, Cleveland, Ohio, director Gorgas Memorial Institute; president Cleveland clinic; regent and ex-president American College of Surgeons, and for seven years engaged in health work in the Philippines.

Dr. Arthur T. McCormack, Louisville, Ky., executive head of the Kentucky State Board of Health.

The best judgment of the medical, surgical, and sanitary profession of the entire country is backing this bill. The American Federation of Labor is also backing the bill, and Mr. Edgar Wallace, the personal representative of Mr. Green, the president of the American Federation of Labor, appeared before the committee and urged the great

importance of this laboratory work. The reasons for this, the need for this laboratory, I may briefly state, are these: With the Panama Canal as the great focal point of international traffic in all the world, situated as it is in the heart of the Tropics, it is a place where disease may be brought and may be scattered to the four quarters of the earth unless proper steps are taken for prevention. We all know of the great work which was done on the Isthmus under the sanitary leadership of General Gorgas in eradicating yellow fever, malaria, and other diseases from the Isthmus, until the Canal Zone and the cities of Panama and Colon are to-day as healthful as any cities of our own country, and more healthful than most of them.

Mr. MOORE of Virginia. Will the gentleman permit an interruption?

Mr. THATCHER. I will.

Mr. MOORE of Virginia. Will the gentleman tell the House something about the make-up of the corporation, the institute, which is to have charge of the laboratory?

Mr. THATCHER. Yes. As I stated a moment ago, it is organized under the laws of the State of Delaware, with no capital stock, no profits are permitted, and no funds allowed to be expended except for the purpose of employing experts like laboratory directors and people of that type and assistants to carry on the work involved.

The SPEAKER. The time of the gentleman from Kentucky has expired.

Mr. PORTER. Mr. Speaker, I ask unanimous consent that the gentleman may continue for five minutes.

The SPEAKER. Is there objection to the request of the gentleman from Pennsylvania?

There was no objection.

Mr. MOORE of Virginia. Can the gentleman think of any governing body made up of more distinguished men than the gentlemen who represent the personnel of the institute?

Mr. THATCHER. I will say that the very cream of the philanthropic and scientific life of this country is sponsoring this work, and the President of the United States is the honorary president of the organization. I now give a list of the officers and directors of the Gorgas Memorial Institute of Tropical and Preventive Medicine, and a statement of the great scientific and philanthropic organizations indorsing the work of the institute, as follows:

Officers: Hon. Calvin Coolidge, honorary president, President of the United States; Franklin Martin, M. D., president, director general American College of Surgeons; Gilbert Fitz-Patrick, M. D., vice president, American Society for Control of Cancer; George M. Reynolds, treasurer, chairman of the board, Continental and Commercial National Bank; W. J. Sennott, assistant treasurer, Continental and Commercial National Bank; W. H. G. Logan, D. D. S., M. D., secretary, secretary American Dental Association; Silas Strawn, President American Bar Association.

Executive committee: Franklin Martin, M. D., chairman, director general American College of Surgeons; Herman Bundesen, M. D., president American Health Association; Bowman C. Crowell, M. D., associate director American College of surgeons; Hon. Charles G. Dawes, Vice President of the United States; Gilbert Fitz-Patrick, M. D., American Society for Control of Cancer; W. H. G. Logan, D. D. S., M. D., secretary American Dental Association; E. W. Ryerson, M. D., Children's Memorial Hospital; Charles H. Thorne, trustee Northwestern University.

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Dr. Franklin Martin, chairman, Chicago, director general, American College of Surgeons.

Hon. R. J. Alfaro, Washington, Panaman minister.

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Dr. Herman N. Bundesen, Chicago, president American Health Association, and formerly commissioner of public health of Chicago.

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Dr. Bowman C. Crowell, Chicago, associate director, American College of Surgeons.

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Dr. George E. de Schweinitz, Philadelphia, professor of ophthalmology, University of Pennsylvania.

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Hon. William Green, Washington, president American Federation of Labor.

Maj. Gen. Merritte W. Ireland, Washington, Surgeon General United States Army.

Dr. Andrew S. Lobingier, Los Angeles, surgeon, Hospital of the Good Samaritan, Clara Barton Hospital.

Dr. W. H. G. Logan, D. D. S., Chicago, secretary American Dental Association.

Dr. Fred Bates Lund, Boston, surgeon in chief, Carney Hospital.

Dr. William J. Mayo, Rochester, Minn., Mayo Clinic.

Dr. Stuart McGuire, Richmond, surgeon in charge, St. Luke's Hospital.

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Brig. Gen. Robert E. Noble, Anniston, Ala., retired.

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Mr. Lewis Pierson, New York City, president, United States Chamber of Commerce.

Hon. Belisario Porras, Panama, former president, Republic of Panama.

Mr. George M. Reynolds, Chicago, chairman of the board, Continental and Commercial National Bank.

Dr. Stewart Roberts, Atlanta, professor of clinical medicine; former president, Southern Medical Association.

Hon. Leo S. Rowe, Washington, director general Pan American Union.

Dr. Edward W. Ryerson, Chicago, consulting surgeon, Children's Memorial Hospital.

Mr. Edward Elwell Spafford, New York, national commander, the American Legion.

Mrs. John Dickinson Sherman, Washington, national president, General Federation of Women's Clubs.

Dr. Ernst A. Sommer, Portland, University of Oregon Medical School.

Dr. Alfred Stengel, Philadelphia, former president, American College of Physicians.

Dr. George David Stewart, New York City, president, American College of Surgeons.

Rear Admiral Edward R. Stitt, M. D., Washington, Surgeon General, United States Navy.

Dr. George W. Swift, Seattle, surgeon, Children's Orthopedic and King County Hospitals.

Mr. Charles H. Thorne, Chicago, trustee, Northwestern University.

Prof. C. E. A. Winslow, Ph. D., New Haven, president, American Public Health Association.

Dr. Hugh Hampton Young, Baltimore, Johns Hopkins University Medical Department.

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Dr. Richard P. Strong, director, School of Tropical Medicine, Harvard University.
Dr. C. C. Bass, director, Laboratory Clinical Medicine, Tulane University.
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Lieut. Col. J. F. Siler, assistant, division of sanitation, United States Army.
Dr. E. E. Tyzzer, professor of comparative pathology, Bussey Institute.

Statutory office: Wilmington, Del.
Executive offices, 400 North Michigan Avenue, Chicago, Ill.

Gorgas Memorial Institute work is indorsed by—

Alumnæ Association of Joseph Price Memorial Hospital, Philadelphia.
American Red Cross.
American Association of Genito-Urinary Surgeons.
American Association of Industrial Physicians and Surgeons.
American Climatological Association.
American College of Surgeons.
American Dental Association.
American Dermatological Association.
American Federation of Labor.
American Gynecological Society.
American Institute of Homeopathy (Congress of States).
American Laryngological Association.
American Neurological Association.
American Orthopedic Association.
American Otological Society.
American Pediatric Society.
American Public Health Association.
American Society of Tropical Medicine.
American Surgical Association.
City, county, and district medical associations.
Conference of State and Provincial Health Authorities of North America.
Daughters of the Southern Confederacy.
Georgia State Medical Association.
Idaho State Medical Association.
Illinois State Dental Society.
International Association of Civic Clubs.
Iowa State Medical Society.
Kansas State Dental Society.
Kentucky State Dental Society.
Kentucky State Medical Association.
Maine Medical Association.
Medical and Chirurgical Faculty of the State of Maryland.
Medical Society of the State of New York.
Medical Women's National Association.
Medical Veterans of the World War.
Missouri State Medical Association.
National Exchange Clubs.
Nevada State Medical Association.
New Hampshire State Medical Society.
New Jersey State Dental Society.
New Orleans Chamber of Commerce.
Ohio State Medical Association.
Oregon State Medical Society.
Pacific Northwest Medical Association.
Pan American Commercial Congress.
Society of Alumni of Bellevue Hospital.
South Dakota State Dental Association.
Southern Commercial Congress.
Southern Surgical Association.
Texas State Dental Society.
Tri-State Medical Association (Wisconsin-Iowa-Illinois).
United States and Western Golf Associations.
Utah State Dental Association.

Utah State Medical Association.
Veterans of Foreign Wars.
Washington State Dental Association.
Washington State Medical Society.
Wisconsin State Dental Society.

I will also read what President Coolidge said on this subject, as follows:

Human misery and the enormous economic loss caused by preventable illness are matters of serious moment to every individual. The Gorgas Memorial's plan to conserve this needless waste of human resources is commendatory and deserving of the support of all thinking people.

This institute is going on with health education in this country through funds raised by popular subscription, already spending $30,000 a year for educational work; but for intensive research work in the Tropics it will be necessary to have help from the various governments which may be affected.

Mr. LINTHICUM. Will the gentleman yield?

Mr. THATCHER. I will.

Mr. LINTHICUM. I want to bring to the gentleman's attention, and in that way to the attention of the House, the matter of how the accounts are protected under this bill. In line 10, page 3, the bill provides that the books and accounts of the Gorgas Memorial Laboratory shall at all times be open to examination by the Comptroller General of the United States.

Mr. THATCHER. Yes. The attempt is made to see that this money is expended properly. By this provision protection is made; and it is based on suggestions made by the Assistant Comptroller General, to whom the bill was submitted.

Mr. MOORE of Virginia. And an annual report is made to Congress.

Mr. THATCHER. Yes; this is also provided in the bill.

Now, Members of the House, I do not think it is necessary to elaborate touching the value of this work. It is well known that the diseases which are considered indigenous to the Tropics may be transmitted to the Temperate Zones, just as was the case with yellow fever formerly when our southern cities were periodically ravaged by this malignant plague; and as was strikingly demonstrated years ago when Philadelphia had one of the greatest outbreaks of yellow fever that this country has ever known. To-day, with our multiplied contacts—for this is the age of a million contacts—with the ships of the world passing through this great canal, and to our own shores, and to foreign shores—there is every reason in the world why, as a matter of prevention, as a matter of protection, and as a matter of foresight, this great work should be organized and carried on there; and all that our Government is asked to do is to make a contribution of $50,000 a year for the actual maintenance of the laboratory—an altogether trivial sum in view of the importance of the work.

And, more than that, it is the purpose of this bill and of the sponsors of this movement to tie into it, not only the Republic of Panama, which has agreed to support it in the most liberal manner, but also all the Latin-American Governments, particularly the tropical countries where these dread diseases exist. We have only scratched the surface in the study and treatment of tropical diseases, the number of which is legion. So, as a matter of protection to ourselves and to our own future, it is of paramount importance that this work

begin without delay, and that we have the contributions and hearty cooperation from these Latin-American countries for the operation of this laboratory when it is established.

Mr. SUMMERS of Washington. Will the gentleman yield?

Mr. THATCHER. I will.

Mr. SUMMERS of Washington. It might seem strange to some that we should engage in a work so far away from home, but I think attention should be called to this fact, that certain of these diseases can better be studied there and their prevention better worked out in that part of the country, notably because of malaria, yellow fever, and many other diseases that occur in the tropical countries and spread to the United States. So it is proper that the work should be carried on in the habitat of these diseases.

Mr. THATCHER. Yes; because of the heat conditions the germs there never die except of "old age." They are never killed by the cold. Moreover, our interest in the health situation is paramount because of the Panama Canal.

Mr. MOORE of Virginia. And Surgeon General Cumming told the committee that there can not be a more suitable and logical place for the study of the tropical diseases than the place where this laboratory is to be located.

Mr. THATCHER. Yes; all the scientific men that appeared before the committee made that statement.

General Gorgas wished to see the entire tropical world redeemed from malignant disease. In Cuba he brought about the absolute elimination of age-old yellow fever after the Walter Reed Board had determined the source of infection. Also, in Cuba, especially in Habana, he greatly reduced malaria. The Stegomyia mosquito, the carrier of yellow-fever infection, and the common black mosquito—the Anopheles—the carrier agency of malarial infection, he exterminated, and a new era dawned for the Queen of the Antilles. He served as chief sanitary officer in Cuba from 1898 to 1902. In 1904 he was appointed chief sanitary officer of the Canal Zone, and in 1907 he was selected as a member of the Isthmian Canal Commission and served in that capacity until the commission was abolished in 1914. In charge of the health and sanitary work in the Canal Zone, by the same practical methods of mosquito extermination, sanitary vigilance, and quarantine he had practiced in Cuba he transformed the Isthmus of Panama, for centuries the greatest plague spot of the world, into a region of health. Without the work of a Gorgas the Panama Canal could never have been constructed, and, in my judgment, the sanitary achievements there and the sanitary lessons taught there will prove of even greater value to the world at large and to posterity than the canal itself. The work of the proposed laboratory will be along original lines. In its operation there will be no duplication of the Canal Zone sanitary activities, which are along established lines of endeavor. Other diseases than yellow fever and malaria remain in the Tropics to be brought under subjection. Other tropical lands are teeming with them. Original research and experimentation must be carried on in order to ferret out the secrets of their malignancy. Thus was yellow fever mastered and malaria brought to bay, and thus must disease after disease fall before the march of science.

In the Anglo-Egyptian Sudan, through the work of the Wellcome Tropical Research Laboratories, miracles of sanitation have been wrought. Mr. Wellcome followed Kitchener to this region and supplemented the latter's work. During a short period before Kitchener's conquest of that region there had perished by sword and famine and disease a native population estimated at 10,000,000. Now, there has come upon that portion of the earth health and healing. Fever, malaria, plague, sleeping sickness, and other dread diseases formerly rampant there, have vanished under the touch of science and humanitarianism. Mr. Wellcome, in giving his fortune and in consecrating his great talents to this work and to the field of tropical research, stands out to-day as one of the earth's greatest benefactors. He was the intimate friend of Gorgas, and visited the latter in Panama. He was a pallbearer at the funeral of General Gorgas in London, and in the hearings on this bill narrated in the most eloquent way the story of those rites.

Let me quote from Mr. Wellcome's testimony before the committee the following touching the value of the Isthmian site for a research laboratory:

In respect to Panama being the ideal location for the Gorgas Memorial Tropical Research Laboratory, I would say that Sir Patrick Manson, the original discoverer, or the first to definitely conceive and work out the idea and realize that the mosquito was the host and carrier of malarial infection, considered Panama to be one of the great tropical disease danger centers of the world. A number of years ago he pointed out that ships passing through the Panama Canal, and to and from the Isthmus and all parts of the world, would bring and carry all manner of diseases—bringing and leaving diseases while picking up and carrying others to various parts of the world. Sir Patrick regarded this as a very serious matter and he expressed to me repeatedly his very strong views on this subject. I have heard him make similar statements at the London School of Tropical Medicine and elsewhere. Furthermore, I know that General Gorgas also held that same view.

Also, in the same connection, I quote the following statement made at the hearings by Dr. Bowman C. Crowell, whom I have already mentioned:

In a discussion of diseases of the Tropics, the most important place belongs to malaria. While methods for the control of malaria are known, the cost of pursuing these methods on such extensive scales as are necessary in the Tropics mitigate against their efficiency. Present methods also call for human cooperation, which it is not always possible to get when dealing with native tropical races. New methods for the treatment of malaria and its elimination from the globe are a very promising field for investigation. They already occupy the attention of innumerable workers, and any addition to this force that it is possible to secure should certainly be encouraged.

There are a large number of cases of anemia in the Tropics, some of which also exist in temperate climates. Many of these are associated with diseases of the spleen, concerning which very little is known.

Diseases due to animal parasites find their home in the Tropics. These parasites, varying from unicellular organisms up to the larger worms, cause diseases of all of the organs of the body, principal among which are those which infest the intestines, producing untold disability. Among these diseases may be mentioned such as amoebic dysentery and hookworm disease; schistosomiasis; the long list of spirochaetal diseases, among which may be mentioned yaws, or framboesia tropica, a most disfiguring disease, bearing many points of similarity to syphilis, if indeed it be not a form of syphilis, as is believed by many; yellow fever comes within the list of spirochaetal diseases, and has a close analogy in dengue and breakbone fever. The cause of dengue is unknown, and but little is known concerning its method of transmission. Leprosy need only be mentioned on account of the general diffusion of knowledge concerning it. A trypanosoma exists in South and Central America and causes an enormous morbidity and mortality. Transmitted by the triatoma megista, which has a widespread distribu-

tion on the South American Continent, it is not at all impossible that the disease itself may spread to the North American Continent. The relation of the parasite which causes it to certain other parasites which are not known to cause disease, merits extensive investigation. Nutritional diseases and diseases due to bacteria exist in the Tropics, some of them in much more intensive form than is true outside of the Tropics; and methods for their control and the prevention of their spread are pressing problems.

A knowledge of the intermediate agents which transmit many diseases, notable among which are the mosquito and the ordinary house fly, is woefully deficient; and recognition of individuals who are the carriers of disease without themselves suffering from it is a sine qua non for the protection of those with whom these individuals come into contact.

While reference here has been made to these diseases as tropical diseases the possibility of the transportation of many of them to our own shores is of pressing economic importance, and those who are conversant with methods of recognition of the diseases already known are more and more frequently recognizing cases of these diseases in our own country. This is a most potent reason for further study and for a wider dissemination of the already existent knowledge concerning these diseases.

It is well within the bounds of possibility that a single finding in the laboratory in the Tropics may prove of such economic value to our Government that it will in one year much more than repay the amount spent for such investigations over a very long period of years. This argument, then, is—from the standpoint of the North American—one of self-preservation, in addition to being one of universal humanitarian import.

The diseases referred to above form only a very small fraction of the innumerable morbid conditions which demand present-day investigation, and any possible addition to the number of organizations studying these diseases will take the form of a moral obligation.

I have personally discussed this subject with Dr. George E. Vincent, president of the Rockefeller Foundation, and he has authorized me to make the statement that the Rockefeller Foundation would cordially welcome into the field of tropical medicine an organization which gives promise of making additions to the knowledge of tropical diseases. The Rockefeller Foundation is interested in the elimination of disease from the Tropics and from temperate climates, and appreciates the limits of our present knowledge. The foundation stands ready to put into practical application such concrete measures as may give promise of success, which may be discovered by any workers.

Doctor Vincent also authorized me to state that there is no conflict in any way between the work contemplated under the auspices of the Gorgas Memorial Institute and that of the Rockefeller Foundation, and that he heartily indorses the inauguration of such work under the auspices of the Gorgas Memorial Institute.

It is planned that the Gorgas Memorial Institute of Tropical and Preventive Medicine will form a center for research at which will be welcomed students from all countries, and that it shall form a center for the dissemination of already existing knowledge and that which may result from its researches. The importance of this in the training of medical officers for our Army, Navy, and Public Health Service, to say nothing of lay physicians, can not be estimated in dollars and cents.

Aside from the appropriateness of the selection of Panama as a site for a memorial to General Gorgas there is no place in the world which geographically offers a greater advantage for the study of diseases of all kinds.

There are only three or four of these tropical laboratories; there are some foundations that send people abroad to make investigations, but only a few such laboratories are maintained in the Tropics. There will be no duplication of this work, as was fully brought out in the hearings. The only research institutions of the proposed character now maintained in the Tropics appear to be the Oswaldo Cruz Institute in Rio de Janeiro, Brazil; the Wellcome Tropical Research Laboratories at Khartoum, Anglo-Egyptian Sudan; and the Columbia School of Tropical Medicine in Porto Rico.

The SPEAKER. The time of the gentleman from Kentucky has expired.

Mr. THATCHER. May I have two minutes more?

The SPEAKER. The gentleman from Kentucky asks unanimous consent to proceed for two minutes. Is there objection?

There was no objection.

Mr. THATCHER. I want to say in conclusion that this work was contemplated by General Gorgas, the greatest sanitarian the world has ever known. One of the dreams of his life was that there would be established this research work in the Tropics, because he believed that through proper sanitation the Tropics could be made wholesome and habitable for all races, including the Caucasian; and this he fully demonstrated on the Isthmus.

Pardon a personal note. During the years 1910, 1911, 1912, and 1913 I had the honor to serve as a member of the Isthmian Canal Commission and as head of the department of civil administration of the Canal Zone. General Gorgas was also a member of the commission and in charge of the health and sanitary work there. We both lived in Ancon. We had our offices in the same building, and were in daily contact. Our relations, official and personal, were of the most delightful character; and in certain features of his work I was able, I believe, to be of some assistance.

I came to know and love him. He was a great man. No difficulty could daunt him. To use the phrase, he was the "master of his event." Determined and serene, with unsurpassed skill, energy, and vision, he wrought the miracles of sanitation wherever he went. He and his beloved wife had experienced yellow fever at Brownsville, Tex., in their earlier lives, and thus became immune to the fearful malady. Hence, as coworkers they ventured into yellow-fever lands altogether unafraid.

I have not the time to speak at length covering the life and deeds of this great man. His work as Surgeon General of the United States Army was in keeping with all that he had done before. He put into the field four and a half millions of fit troops out of a total examined of 7,000,000. This was physically and mentally the finest army the world has ever known, and the heroic feats of American arms on the ensanguined fields of France gave eloquent evidence of the fact. After the close of that great conflict he dreamed of the day when in his own country, at least, health examinations would become general and life lengthened by more than a third of its accustomed span through timely diagnosis and preventive measures. He also dreamed, as he had so often dreamed before, of the time when intensive study and research would lead to the redemption of the entire tropical world from its terrible plagues to man and beast. The Gorgas Memorial Institute is endeavoring to inaugurate and carry on the work involved in these two ideals. Unaided by governmental funds it is already engaged in the suggested work in the United States. Touching the other effort, it is ready to act and only needs the enactment of the pending bill to carry on in that connection. Surely no more worthy measure may claim congressional attention. No better investment can ever be made than is that here proposed; and the value of this enterprise from the standpoint of strengthening the bonds of friendship and good will between our own country and our sister Republics to the southward will prove incalculable.

I am very grateful that as a Member of this House I have been in position to introduce this measure and press for its enactment.

I know of the great service rendered in Panama by General Gorgas, and the work of supreme importance that he did there. The proposed laboratory and its operation will constitute a fitting and vital memorial of his important work in Panama, in the heart of his activities there, and it is suggested, and the terms are so carried in the bill, that this institution shall be named the Gorgas Memorial Laboratory. [Applause.]

SPEECH OF REPRESENTATIVE J. CHARLES LINTHICUM, OF MARYLAND

Mr. LINTHICUM. Mr. Speaker, this bill (H. R. 8128) to authorize a permanent annual appropriation of $50,000 for the maintenance and operation of the Gorgas Memorial Laboratory is one of vast importance to the American people, because it honors and memorializes a man who ranks high in the medical profession not only in the science of medicine itself but in the study and equipment for that more recent adaptation of preventive medicine and sanitation.

Gen. William Crawford Gorgas was a product of the Southland. He first saw the light of day in Mobile, Ala., on October 3, 1854, the son of Gen. Josiah Gorgas, chief of ordnance of the Southern Confederacy, and his mother, Amelia Gayle, daughter of Governor Gayle, of Alabama. The life of General Gorgas seems a romance in the history of medical men of our country and as interesting as that of the celebrated miracle men of past ages.

He was graduated from the University of the South, took his M. D. from Bellevue Hospital Medical College in 1879, and entered the Medical Department of the United States Army in 1880 as first lieutenant. When yellow fever broke out at Fort Brown, near Brownsville, Tex., he was sent to assist in the medical care of the civilian population. It was at this time and place he first met Miss Marie Cook Doughty, who, being seriously ill of yellow fever, was attended by Doctor Gorgas; he himself contracted the disease. The romance not only secured him Miss Doughty as a devoted wife throughout his lifetime, but, having contracted yellow fever, he became immune to that disease and was better able to combat it for others.

As has been well said, to write of Gorgas is to write of the infinite. The subject is fascinating in that the man himself was a genius of such rare ability and achievements that his life is comparable with such others as Lord Lister and Edison. He wrought miracles and made countries hitherto uninhabitable possible of habitation, bringing in its wake happiness, progress, and prosperity. Some one has said that there were three outstanding epochs in the life of General Gorgas: First, he was early to recognize the achievements of the Walter Reed Board and its discovery of the method of transmission of yellow fever. With this belief in mind, he approached General Wood, in command at Habana, Cuba, and stated that if the Walter Reed theory was correct in reference to yellow fever, which he believed it to be, and if he would give him the authority, he, General Gorgas, would eliminate yellow fever from Habana. This authority General Wood gave him in February, 1901, and in that same year

General Gorgas cleaned up Habana and with it yellow fever, which had existed for the past 150 years or more.

Second. The next time the magical wand of this great man was called into service was when we began to build the Panama Canal, and the same methods were employed in Panama by which he cleaned up Habana, so that yellow fever was eliminated from a territory which it had menaced for more than 400 years, and in a remarkably short period of time, extending from March, 1905, to November of that year. Thus the cause which had prevented the French under De Lesseps completing the work, and which had killed thousands of men, was removed.

His fame had spread far and wide, and he became known as a great sanitarian, was a pronounced leader in that work, and so acknowledged by the sanitary specialists of the world. It was therefore natural that at the beginning of the World War his outstanding accomplishments, so well known, should bring to him adequate recognition, which brought him to his third epoch through his appointment as Surgeon General of the United States Army. At this time he was 60 years of age. He had a medical corps of some 32,000 men, carefully selected from all over the country. His enlisted personnel of nurses, men, aides, and so forth, numbered nearly 200,000, and was said by Doctor Martin to be one of the greatest corps under one major general the world has ever known.

General Gorgas introduced into the Army the examination of every man by a board of experts, consisting of dentist, oculist, aurist, pathologist, surgeon, and a medical man. This was carried out, and from an examination of 7,000,000 men, 4,500,000 were found to be fit and acceptable. It was from this expert examination that we ascertained for the first time the number of men unfit for military service. From that day until this, the Government has appropriated funds, and experienced men have been studying and endeavoring to restore to health the vast number of those unfit for service and laying down rules and regulations for future generations, thereby benefiting humanity at large.

General Gorgas was known by a great many men, both of the medical and civilian population of our country. He was a man of kindly nature, modest habits, and a willingness to help. It was my pleasure to meet him on a number of occasions, but the one which made the deepest impression upon my mind was on the occasion when our then mayor, Mr. James H. Preston, invited him to Baltimore to consult as to the best method of eliminating mosquitos. I rode with him from the city hall to Fort McHenry, where he visited and enthused over the old fort where Francis Scott Key wrote "The Star-Spangled Banner." I do not know what his advice was as to the elimination of mosquitos, but I do know that Baltimore has very few mosquitos to-day and enjoys the reputation of being one of the most healthful metropolitan centers in the country.

I was glad to hear our good friend and colleague, Henry St. George Tucker, tell of his association with him in childhood, and of his fascination for him in those early days. We are told by Mr. Welcome, of England, a man who has given perhaps as much for preventive medicine and sanitation in Africa and other places as any other man now living; he was good enough to appear before

our committee, and stated that King George had long been familiar with the wonderful work of General Gorgas and requested through the British Army Medical Service a desire to receive General Gorgas at Buckingham Palace, and upon being informed that General Gorgas was seriously ill in a hospital the King remarked, "If General Gorgas is too ill to see me, I shall go to the hospital to see him," which he did, and there conferred upon him the highest honor possible for the King to bestow upon anyone not a British subject. In speaking of the great tribute of honor and respect, English periodicals said:

It seems good that death should find him here, for so there came our opportunity to do a great man honor. He passed through the great door through which the sun streams into the nave of St. Paul's, and there he lay with Nelson and Wellington and all that mighty host who came this way and passed into the universe.

They will take him to his own land, but in truth he belongs to us all. He was one of life's great helpers, for he cleaned up foul places and made them sweet, and now, as they said of Lincoln, "he belongs to the ages."

General Gorgas when taken ill in London was on his way, at the request of the British Government, to Africa to study the yellow-fever problem in British territory. This, however, was the last mission undertaken by General Gorgas, for here in London he succumbed to illness and passed away amidst the profound sorrow of the English people and the world at large. He was given a state funeral of full military honors and was accorded a temporary resting place in St. Paul's Cathedral, where rest many of England's greatest naval and military heroes.

Representatives of the King and the royal family—

says Mr. Welcome—

British Cabinet members, ministers, leading statesmen, officers of the British Army and Navy, diplomatic corps of the great powers at the Court of St. James paid their respects, while hundreds of thousands thronged the streets to attest their appreciation of the life of this great man.

He has laid down his tasks and passed to the Great Beyond. It is now for us to perpetuate his ideas, his works, and his discoveries. This institution established in Panama, while honoring him, will be of inestimable benefit to the world in the study of bacteriology, preventive medicine, and sanitation in those countries to the south of us. It will enable us to free people from malignant diseases and make lands habitable which are now pestilential. It will promote greater unity between our country and Central and South American countries. It will do a vast work in the perpetuation of peace by the establishment of those things which make life worth living.

The name of Gorgas will ever survive among the nations of the earth. His life's work will be extended and enlarged by generations yet unborn. Humanity will call him blessed, and the peoples of the world benefited by his passing this way.

I sincerely trust, Mr. Speaker, we will approve this bill unanimously, that the good work may be continued through this laboratory for which we propose to provide.

Mr. O'CONNELL. And is it not true that it has also the unanimous support of the people of Panama as well?

Mr. LINTHICUM. It certainly has the unanimous support of the Government of Panama. [Applause.]

SPEECH OF REPRESENTATIVE EDWARD E. BROWNE, OF WISCONSIN

Mr. BROWNE. Mr. Speaker, this bill proposes that the United States cooperate with the Republic of Panama in the maintenance and operation of a thoroughly equipped laboratory to be built by Panama and located upon a site in the Republic of Panama or in the Canal Zone.

The laboratory will conduct intensive research work and will specialize in the study and control of tropical diseases.

Mr. Speaker, I firmly believe that if Congress appropriates the money asked for it will be fully justified from an economic standpoint and also as a worthy tribute to a distinguished American physician whose accomplishments in sanitation, preventive medicine, and the treatment of tropical diseases have never been surpassed, if ever equaled, in the history of the world.

We have erected costly and imposing monuments to our military heroes in the past and will undoubtedly do so in the future to perpetuate their memory and valor on the battle field. Is it not even more fitting to erect a monument to this great physician, who exhibited equal fortitude and courage in his victorious campaign in the Tropics against deadly disease and pestilence, and whose great discoveries saved the lives of millions of his fellow men?

THE KIND OF MONUMENT HE WOULD CHOOSE

General Gorgas was a modest man. In his wonderful work he craved no publicity. "He let not his left hand know what his right hand doeth," but gave his great discoveries to mankind in the same spirit as the Divine Healer of old.

If General Gorgas could select a monument, he would choose one such as this bill contemplates, a laboratory which would be an instrument for carrying on and perpetuating his splendid work for his fellow men, a laboratory which would unlock the secrets and find the God-given cures for the dread diseases which devastate peoples and prevent the settlement of countries.

A GREAT PHYSICIAN AND EXECUTIVE

General Gorgas was not only a great physician but a great executive; an able organizer as well as a wonderful sanitarian. He accomplished almost the impossible.

In less than eight months he eliminated yellow fever from Habana, where it had existed and taken its dreadful toll of thousands annually for over 150 years.

In less than two years he transformed the Isthmus of Panama from one of the most unhealthy places in the world, where tropical diseases had overcome all efforts to connect the two oceans, to one of the healthiest places on earth. Without the work of General Gorgas the building of the Panama Canal would have been impossible.

From a few small hospitals in the beginning of the World War he developed the great base and cantonment hospitals required for the care of an army of 4,000,000 men on two continents and provided

the equipment necessary for them. In two years he organized the greatest medical corps in point of efficiency and size to care for 4,000,000 soldiers, the largest army in our history.

A MEMORIAL WHICH WILL BIND BY THE TIES OF FRIENDSHIP THE PEOPLES OF THE WESTERN HEMISPHERE

A research laboratory such as this bill contemplates, equipped with all the facilities known to science for the study of disease, especially diseases of the Tropics, located on the Isthmus of Panama, will be of inestimable value to the whole world. The most learned scientists of the 21 American Republics will meet in this great research laboratory on common ground and working together for the same noble purpose under the inspiration of the beloved name of Gorgas, will unite the peoples of the Western Hemisphere in a bond of friendship which will grow stronger as the years go by.

Generations may come and go and centuries pass; monuments of marble may crumble, or the achievements of the men they commemorate be forgotten, but the great men of science moved by the same lofty purpose and noble impulse which inspired General Gorgas will be working in the Gorgas Memorial Laboratory for the alleviation of the suffering of mankind. [Applause.]

SPEECH OF REPRESENTATIVE LISTER HILL, OF ALABAMA

Mr. HILL of Alabama. Mr. Speaker, I move to strike out the last word, and ask unanimous consent to extend my remarks in the RECORD.

The SPEAKER. Is there objection?

There was no objection.

Mr. HILL of Alabama. Mr. Speaker, it is with much pride and deep gratification that I give my support and my vote to the pending bill which would make possible the erection by the Republic of Panama of a great laboratory in that country at a cost of half a million dollars to search out the cause and cure of tropical diseases, to be maintained in part by an annual appropriation of $50,000 by the Government of the United States and to be named the Gorgas Memorial Laboratory in commemoration of the life and work of that great physician and great American, William Crawford Gorgas. It was in the little town of Toulminville, a suburb of the historic old city of Mobile, in Alabama, the State which I have the honor to represent, that on the 3d day of October, 1854, William Crawford Gorgas was born, the son of Gen. Josiah Gorgas and Amelia Gayle Gorgas. Gen. Josiah Gorgas served as chief of ordnance of the Confederate Army during the War between the States, was for 10 years president of the University of the South at Sewanee, Tenn., and later president of the University of Alabama at Tuscaloosa, Ala. Mrs. Amelia Gayle Gorgas was the daughter of Hon. John Gayle, who was Governor of Alabama and afterwards a Member of Congress and a United States district judge. When I entered the University of Alabama as a student in the fall of 1911, I soon came to know Mrs. Amelia Gayle Gorgas. For many years she had been the librarian of the university library. Her lovely old home in the very

heart of the campus was the rendezvous for the students who came and went with the passing years. She was their kindest critic, their wisest counsellor, their best friend, known by all and loved and revered by all, the mother of the university campus. The magnificent new university library is the Amelia Gayle Gorgas Library, named as a tribute of love and of appreciation of the life, the service, and the faith of this noble woman. During my university days Miss Mamie Gorgas, General Gorgas's sister, was the assistant librarian at the university library. Her kindly manner, her gentle spirit endeared her to all. Many were the proud and happy moments we spent together in talking of her great brother and his great work. Upon our entrance into the World War, when I was examined and rejected for admission to the Army on account of underweight, my underweight was waived through the good offices of General Gorgas, then the Surgeon General of the Army, and my heart's desire found realization by my admission to the Army.

Profane history tells us of Alexanders and Cæsars and Napoleons who came in with the blare of trumpets, the clash of arms, and the thunder of armies, establishing dynasties and empires which endured for a time and then swayed, tottered, crumbled, and fell forever. Sacred history tells us of the silent Nazarene, who came without the pomp and pageantry and circumstances of temporal monarchs and through the silent influences emanating from his own perfect life and character established a kingdom as wide as the universe and as lasting as eternity. The future historian will tell of William Crawford Gorgas, patient and devoted man, who walked in the footsteps of the Great Physician and whose life of humility, service, and sacrifice brought more blessings to mankind than all the kings and conquerors and empire builders.

In the hidden wastes of the Tropics there lurked an enemy, silent but inexorable, that made them the white man's sepulchre. From its home in the Tropics this same yellow fever often journeyed forth into the cooler climate of the Temperate Zone, leaving in its wake a trail of woe, of terror, and of death. In 1793 the dread disease ventured even as far north as Philadelphia and with terrible suddenness fell upon that city. There was scarcely a home that was not afflicted; the rich quarters as well as the poor abounded in the disease; the clean as well as the filthy, and all ages and colors rendered their tribute. In a few brief weeks one-tenth of the population was dead. In that most interesting and enlightening volume, William Crawford Gorgas: His Life and Work, the colabor of his widow, Mrs. Marie D. Gorgas, and Hon. Burton J. Hendrick, we find this interesting account of conditions in Philadelphia during the epidemic:

> In a few days the city was in a state of the wildest disorder. As usual, all fled who could get away; for weeks there was a continuous procession of carts, coaches, wagons, and "chairs" transporting families and furniture in all directions; in the towns to which the refugees went they were most unwelcome visitors, and in many cases they were turned back at the gate. All phases of business and community life came suddenly to an end; banks closed; factories shut their doors, leaving thousands without employment; newspapers stopped publication, and churches ceased their functions for want of congregations. Sick persons sometimes fell dead in the street, their corpses lying for weeks without burial * * *.
>
> The most distinguished citizens were buried unceremoniously with no human attendant except the negro who drove the death cart. The appearance of

anything that resembled such a funeral was a signal for the population to flee in all directions. In many cases husbands abandoned their sick wives and wives their sick husbands; instances were not unknown in which parents fled from their children and children left their parents to die in neglect. The afflicted were sometimes left to perish miserably without medicine or a drink of water, and even women in childbirth frequently received no care. One writer records as an evidence of the state of the popular frenzy that had ruled all summer the delight with which the populace looked upon a conventional funeral proceeding in leisure and dignity through the streets. It had for so many months been the custom to hustle off unattended corpses at midnight or to leave them unburied in vacant lots that even this somber manifestation of normal existence was a cause for general rejoicing.

The famous Dr. Benjamin Rush and Matthew Carey have left accounts of the epidemic which have a strong resemblance to Defoe's description of the great London plague of 1664–65. There was not a year in the nineteenth century during which this unknown and impalpable enemy did not claim its victims in many American cities. Particularly did the cities on the Gulf coast, such as New Orleans, Mobile, and Pensacola, many times satiate the voracious appetite of this unholy plague.

In 1880 yellow fever in its most violent form was exacting heavy toll of the people of Brownsville, Tex. Gorgas, then a young lieutenant in the Medical Corps of the Army, volunteered to go to the stricken area and was sent to Fort Brown, at Brownsville, to assist in the medical care of the civilian population. Here fate seemed to ordain him as her own and to prepare and equip him for the high destiny which was his. Here he met for the first time Miss Marie Cook Doughty, whom he attended while seriously ill with yellow fever and whom he later married. As his wife, his silent partner through the years, her unfaltering faith and appreciation encouraged him, and her devoted care and loving hands helped the master work out his noble plan. Here he himself fell a victim to the dread disease and thereby became immune to it for the rest of his life.

In 1898 Gorgas was appointed chief sanitary officer at Habana. In 1900 there came to Habana the immortal four, Walter Reed, James Carroll, Jesse W. Lazear, and Aristides Agramonte, the commission charged by the Government of the United States with solving, if possible, the baffling and perplexing problem of the cause of yellow fever. This commission headed by Major Reed, himself a southerner like Gorgas, using the elaborate statistical study of the spread of yellow fever in houses made by that other great southerner, Dr. Henry R. Carter, of the United States Public Health Service, and the mosquito theory of infection, as advanced by Dr. Carlos J. Finlay, of Habana, while armed with the knowledge brilliantly demonstrated by Sir Ronald Ross that the Anopheles mosquito was the infecting agent in malaria fever, after months of devoted work crowned with wonderful self-sacrifice and marvelous self-abnegation in which the young, the brilliant, the gallant Lazear gave his life, definitely demonstrated that the Stegomyia mosquito was the infecting agent in yellow fever.

If it is the mosquito—

Said Gorgas, when the Reed experiments were under way—

I am going to get rid of the mosquito.

Even Reed himself smiled at the idea.

It can not be done—

he said, and his opinion was the one that generally prevailed in Habana at that time. Most scientists regarded Reed's indictment of the Stegomyia mosquito as merely a brilliant academic performance. They could not see how it greatly lessened the general yellow fever peril. In fact, Reed seemed to have reduced the situation to one of utter despair. He had proved that the Stegomyia conveyed the disease; but how could the Stegomyia be controlled except by destroying him—a seemingly impossible task. Mosquitoes existed not by the thousands of millions but by the uncountable billions. Every environ in Habana was full of them. They swarmed in the streets, the alleyways, the byways, the houses, in every conceivable place in the city. Often they settled over the city like a hideous cloud. As has been well said:

The Reed discovery came almost like a sentence of death. Habana always had had yellow fever and now it seemed certain that Habana would always have it. To run around the city attempting to banish the disease by killing these gnats—what occupation could seem more useless and more ludicrous? One might as well attempt to banish the air in which the mosquitoes passed their brief destructive existence. What Reed had apparently accomplished was to add a new horror to daily existence.

In spite of the doubts, the fears of those about him, in the face of the laughter and the jibes of scientists, notwithstanding the oppression of the seemingly hopelessness of the task, the quiet, devoted sanitary officer of the city set himself with indomitable resolution and religious fervor to the destruction of the Stegomyia. He cleaned up the pest holes, the hidden waste, the unclean places, the foul dens of the city, and by the use of kerosene and petroleum rendered uninhabitable to the Stegomyia its breeding places. With his sanitary methods he swept through the city, cleaning and purifying it like the River Alpheus through the Augean stables. He drove the Stegomyia before him like the withered leaves before the autumn gale. In the brief time of seven and one-half months Gorgas delivered the city from the Stegomyia and lifted the pall that had hung over it for 140 years. For all these years there had not been a day when yellow fever had not prevailed in Habana. To-day Habana is healthier than the average American city. It stands the proud capital of a treasure-laden isle, the great city freed from dread disease, one of the most beautiful of all the world, whose charm is the delight of all privileged to enjoy the hospitality of its people, with argosies of commerce bound for its harbor, and an admiring America rejoicing in its happiness and its glory—a living and eternal monument to the wonder and the genius and the faith of William Crawford Gorgas. What had been done in Cuba could be done in other disease-ridden countries; what had been accomplished with yellow fever could be accomplished with other similar plagues. The Tropics with their hidden treasures, believed through the centuries incapable of habitation by the white man, were now shown to be habitable to him. The redemption of these mighty territories lay in the offing, and it was Gorgas who had proven that that redemption was possible. He now dedicated himself to the great task of the redemption.

In 1904 the United States Government undertook the stupendous task of the construction of the Panama Canal. A few years before the French Panama Canal Co. had attempted the task only to find

its money, its efforts, its hopes, lost in utter failure. The French company had the skill, it had the ambition, it had the money, it had everything but one thing, and that was the genius of a Gorgas. In 1885, in writing about Panama, the historian James Anthony Froude, said:

> There is not perhaps now concentrated in any single spot so much swindling and villainy, so much foul disease, such a hideous dungheap of physical and moral abomination. The Isthmus is a damp, tropical jungle, intensely hot, swarming with mosquitoes, snakes, alligators, scorpions, and centipedes; the home even as nature made it of yellow fever, typhus, and dysentery.

At one time the French company brought to Panama 500 young engineers, put them to work in the swamps, and not one of them lived to draw his first month's pay. The pestilence of the swamp and the disease of the jungle had written the final chapter of the French company in terms of dismay, disaster, and death. It was within the shadow of these failures, haunted by their ruins, beset by the same implacable enemies that had brought them about that Gorgas found himself in 1904 as the chief sanitary officer of the Canal Zone charged with the gigantic task of conquering these enemies and making possible the construction of the canal. Within less than two years after he obtained the necessary help and supplies he exterminated the mosquitoes, eradicated yellow fever and malaria, cleaned up the Canal Zone, and made possible the building of the canal. Some Virgil will weave the incomparable story of Gorgas's triumph into a new epic—an epic of the jungle, of the fury and fatal power of its denizens—an epic that will tell of the tact, the patience, the perseverance, the courage of its hero handicapped by his own Government, opposed and thwarted at times by the officials of that Government whose very lives lay in his hands and whose help should have been his staunchest and best support, and in this epic the reader will find—

> the modern realization of the legend of Heracles, the cleanser of foul places and the enemy of evil beasts.

Of Gorgas's wonderful achievement in Panama, Sir William Osler, at the time regius professor at Oxford, said in his famous Edinburgh sermon on "Man's redemption of man":

> There is nothing to match it in the history of human achievement. Before our eyes to-day the most striking experiment ever made in sanitation is in progress. The digging of the Panama Canal was acknowledged to be a question of the health of the workers. For four centuries the Isthmus had been the white man's grave. * * * Here is a chapter in human achievement for which it would be hard to find a parallel.

In 1907, in recognition of the great work he was doing, Gorgas was made a member of the Isthmian Canal Commission, and in 1915 Gorgas and his associates on the commission were given a vote of thanks by Congress for the distinguished service rendered in the construction of the Panama Canal. This is one of the few instances in history since Hippocrates was awarded a civic crown by the citizens of Athens for averting a pestilence from the city that sanitary achievement has been recognized by the State.

When the United States entered the World War Gorgas was the Surgeon General of the United States Army. With that vision and prescience that had signalized his every endeavor he had been preparing for months for the inevitable conflict. In every previous war

in which our country had engaged it was the ravages of disease rather than the bullets of the enemy that had stricken down brave men and swelled the casualty lists. Under the guiding hand and the devoted leadership of General Gorgas as Surgeon General we mobilized, trained, transported 3,000 miles to Europe, and put into action the greatest army we ever had with a smaller death rate than had hitherto been known in the annals of military medicine. When the American Army commenced its great advance in July, 1918, at Chateau-Thierry it was able to continue the terrific drive without cessation until it crowned the American standards with victory on the heights of Sedan the following November because Gorgas had filled that army with the strongest and the best of America's manhood and had then safeguarded and protected them from the ravages of disease. As William Crawford Gorgas had made possible the building of the Panama Canal, he likewise made possible the brilliant triumph of American arms on the western front. With Wilson and Pershing, Gorgas must take his place as one of the great leaders of that great conflict.

During the war when the influenza epidemic raged at Camp Wheeler near Macon, Ga., he and a dozen of the leading physicians of the country went there where many of the flower of Alabama's manhood were stationed with the Federalized Alabama National Guard Brigade under the command of Gen. R. E. Steiner. When conditions had improved the officers of the brigade gave General Gorgas a dinner. In a happy speech in response to the compliments paid him, his love for his native State of Alabama, his love for his country, and his love for the great profession he had entered many years before as a young lieutenant, found expression when he said:

> I have had every honor my profession could give me. My Government has given me every honor that it could bestow upon any physician in its medical service. Yet, I am not satisfied. I still have one ambition to realize before I can count my life happy and rounded out. I wish it were possible for the President to reduce my rank as major general to that of brigadier general and put me in command in active service in France of this brigade of splendid Alabamians whom I have seen here.

From the time of his great success in Habana and particularly after his world-famous achievement in Panama, General Gorgas was appealed to by nearly every disease-ridden country of the world to come and liberate it as he had liberated Habana and the Isthmus of Panama. From time to time when he could get away from his duties for a short period he obtained temporary leave of absence and went to Ecuador, Peru, Colombia, Brazil, Venezuela, South Africa, and other countries, ever fighting disease, ever waging war on pestilence, ever laboring, ever serving suffering humanity. After his retirement from the Army at the age of 64, he was selected as chief of the Rockefeller Yellow Fever Foundation, and in that position at the time of his death he was working out the plans and laying the strategems to rid the entire world of the dread disease. In General Gorgas's life were mirrored the virtues of his great profession, the medical profession that asks not whence its patient comes nor whither he goes; that knows not race nor class nor creed; that makes no demands and needs no assurances; that lets no call go unanswered from its door; that ministers to the sick, the diseased, and the suffer-

ing; that blesses them, eases their pain, soothes their sorrows, dries up their tears, and breathes hope into their despairing hearts.

General Gorgas was the whole world's physician. The debt the world owes him can never be computed. Diseases which he exterminated and which at the time were indigenous to a particular country or to the Tropics to-day with modern transportation, with modern lines of communication, with all the world neighbors, might well travel the globe and pile the corpses of their victims even to the ends of the earth. "The Saviour of the Tropics" was to a degree beyond human ken the protector of the world.

On May 8, 1920, in company with his devoted wife and his official staff, General Gorgas set sail for London, whence, at the invitation of the British Government, he was going to investigate yellow-fever conditions on the west coast of Africa. He fell ill in London on May 30. Previously King George had made an appointment to see him at a subsequent date, and when the King learned of his illness he said, "If General Gorgas is too ill to come to the palace to see me, I shall go to the hospital to see him." The Sovereign of the British Empire visited the hospital and presented to the general the insignia of Knight Commander of the Most Distinguished Order of St. Michael and St. George. This was but one of the many honors and decorations that came to General Gorgas from the rulers and governments of many of the great nations of the earth in recognition of his services to the cause of humanity.

On the 4th day of July, 1920, in London, William Crawford Gorgas, tired and worn, peacefully and quietly slipped out of the company of living men and went home to the Great Physician. At the command of the King and by order of the British Government, a state funeral with full military honors was accorded him in St. Paul's Cathedral, London, the resting place of England's greatest naval and military heroes. It was one of the greatest and most impressive funerals in England in modern times. Representatives of the King and the royal family, the British cabinet ministers, leading statesmen, high officials and officers of the British Army and Navy, the diplomatic corps representing the great nations at the Court of St. James, and representatives of the leading medical and other scientific institutions attended and paid homage to the great man. Hundreds of thousands of people thronged the streets and with bared heads reverently attested their appreciation of him who had contributed so much to suffering humanity.

The great papers and periodicals of the British Empire voiced their tribute of appreciation and beautifully and eloquently told of General Gorgas and his work. As one said in describing his funeral:

> And the other day he rode up Ludgate Hill, sleeping his last sleep on earth, wrapped in the Stars and Stripes. There were thousands of men and women and children standing still, there were hundreds of men in khaki passing by, there were ambassadors and other great people and the lonely woman who was on her way with her hero to conquer disease when death took him from her. And there was the riderless horse. All these came up Ludgate Hill, and as the sun poured down on this ancient way, our hearts and ears throbbing with the solemn music of the Dead March, we knew that we were looking on the passing of a man whose name would shine for ages in the history of our race. It seemed good that death should find him here, for so there came our opportunity to do a great man honor.

He passed through the great door through which the sun streams into the nave of St. Paul's, and there he lay with Nelson and Wellington and all that mighty host who came this way and passed into the universe. They will take him to his own land, but in truth he belongs to us all. He was one of life's great helpers, for he cleaned up foul places and made them sweet, and now he belongs to the ages.

General Gorgas's body was brought back to his own country, where he was given its greatest honors and where they laid him to rest in Arlington, the Valhalla of America's heroic dead. There he sleeps on the slopes of the historic Potomac, beneath the folds of Old Glory, within the shadow of the Capitol of the Nation he loved and served so well. France has her Louis Pasteur, England has her Joseph Lister, and America has her William Crawford Gorgas. Patient and devoted man, servant of all peoples and of the most-high God, let his people, the American people, through their Government build a fitting memorial to him, a memorial that will carry on his great and beneficient work. "He served the human lot to raise and won a name that endless ages praise."

SPEECH OF REPRESENTATIVE BURTON L. FRENCH, OF IDAHO

Mr. FRENCH. Mr. Speaker, may I indicate my support of this bill from a standpoint other than that which has already been so ably presented by those who are members of the committee and who have reported the measure. A little over one month ago the Pan American Congress held a session in Habana. At that congress were representatives of the United States. The chief object of the congress is to promote cooperation and good will. It is the policy of the United States to try in every way to encourage the friendliest relations among the nations of the Americas.

About 10 days ago in the hearings before the naval appropriation subcommittee, in connection with inquiries touching the activities of the marines in Nicaragua, it appeared that the death rate among the children in Nicaragua is such that during the first year about three of the babies perish out of every five that are born. This means poor health conditions in unusual degree. I can think of nothing more calculated to draw together the peoples of the Americas, and particularly the peoples of the tropical countries, than a joint program in which the United States may have a part looking to the relief of humanity from deadly ills, looking to the removal of distress, looking to the alleviation of suffering that occurs by reason of disease. This bill proposes such a program. It would not be at all surprising to me if the small investment, relatively speaking, that we are asked to make in this work would, after all, come to be the finest sort of contribution which this Nation could make in the working out of a program for peace and accord among the people of North and South America. I am for the bill. [Applause.]

SPEECH OF REPRESENTATIVE WILLIAM B. OLIVER, OF ALABAMA

Mr. OLIVER of Alabama. Mr. Speaker, I can not omit to here express the appreciation and the great and justifiable pride of the people of my State for the further honors which this Congress now seeks to pay the memory of that immortal American, Gen. William Crawford Gorgas, born at Mobile, Ala., and who always claimed his

political domicile in my district at Tuscaloosa, Ala., where a loved sister now lives in the beautiful old Gorgas home, rendering high service to the youth of our country as librarian of the University of Alabama, a position which her greatly beloved and sainted mother held for more than a third of a century next preceding her death.

It is peculiarly fitting that our country should generously cooperate with Central and South America in establishing and maintaining at Panama a memorial of international import to this great American, for certainly no man ever served humanity in a wider, more beneficent, more lasting way than did General Gorgas. This is why he was loved and honored, not alone at home but by the nations of the earth, and though he has passed away from us forever, the fruits of his labor still live and will continue to serve mankind through this memorial laboratory. Standing as it will at the crossroads of the nations, it will ever serve to remind the world that this great American above all brought to the practice of his profession in all its relations the loftiest standards of professional duty and honor. The purity of his life, the nobility and dignity of his character, his scorn of everything sordid, base, or mean, the kindness of his heart, and the grace and charm of his manner, added to the wealth and abundance of his intellectual accomplishments, made him the finest type and model of what a great physician can and should be. As such, the world will not forget, but will ever cherish his memory, and the generous aspirations of future generations will find in his life and fame a perpetual incentive to noble endeavor.

In conclusion I wish to refer to a memorial service held in the city of Washington on January 16, 1921, under the auspices of the Southern Society, and participated in by high representatives from many nations, in which he was adjudged "Forerunner of canal builders, preserver of life, and pioneer in preventive medicine." (See proceedings of meeting in pamphlet form in Congressional Library.)

At this service tributes were paid to General Gorgas by distinguished officials from many countries, presaging the universal fame which he is accorded to-day. It would seem to be peculiarly appropriate to spread on the records of Congress a single beautiful flower from this bouquet of world-wide praise. Its appropriateness is evidenced by the fact that it was delivered by the ambassador of France, which great country at one time was faced with the problem which later was so successfully solved by General Gorgas. With a gracious gesture toward the one who accomplished where another of merit failed, as a beautiful tribute from a representative of one great nation to the internationally honored son of another great nation, I will here read and append the address of Hon. J. J. Jusserand, ambassador of France:

Madam, ladies, and gentlemen, I consider it a high privilege to bring the homage of France to a great memory. France, whose contribution to medical science goes back to the very Middle Ages, has ever known how to appreciate merit in this line, not only that of her own sons, but that also of the sons of other countries. Our admiration for Gorgas was profound, and I bring here the expression of it. Men of note, who perform during their lives great tasks, are of two sorts: Those who in the span of their existence have wanted to serve their country and also themselves and those who have desired to serve nothing but their country and mankind. Those of the first category usually draw more attention in their lifetime; they have, to be sure, like the others, much merit, but their merit is better advertised. The others have

only merit without advertising. When death overtakes both sorts, then it infallibly happens that the fame of the first dwindles and that of the other increases. Of the latter category was among us French Pasteur and among you Americans Gorgas.

He had, throughout life, no thought but to serve. The intensity of his desire to help and the magnitude of his work left him no time for personal consideration. That work was of immense import. The discoveries which made it possible began with a son of France, Laveran, and his studies on paludism in 1880 and with those of Finlay in Cuba on yellow fever, in 1881. It seemed an impossible battle to wage, that fight against the innumerable, ever-increasing, omnipresent, intangible enemy—the mosquito. How could one get rid of an inaccessible pest? That means was found by Gorgas. Where there had been pestilence, after he came there was health and prosperity. Where so many Frenchmen died in their effort to dig the Panama Canal, Americans lived in health and security after Gorgas had established his wise regulations. His firm and gentle hand acted as if endowed with a magical power, the magic of good will, kindness, warm-heartedness.

When his public task was finished, his life's task was not, for his duties were not dictated to him by any power above him, but from a power within himself, his ever-increasing conscience. He told me so when I saw him in that city of Panama, which he had caused to be what it now is—the beautiful, radiant capital of the recently born Republic. One of the worst plague spots remaining in the world was Guayaquil, and I remember an entertainment given when we were on the Isthmus in which took part the handsome young officers of an American destroyer. The ship was ordered the next day to Guayaquil, and we heard three days later that the commander and several of his men were dead of yellow fever. Gorgas has been there since, and, provided his regulations are well observed, no one will any more die of yellow fever in those parts.

He died in full activity, tended by the one who was throughout his life his devoted companion and mainstay, and when he closed his eyes on the world, of which he had been such a useful citizen, he could, with a serene heart, say the nunc dimitis servum tuum; and think, my day is passed, but to the best of my ability it has been well filled.

[Applause.]

SPEECH OF REPRESENTATIVE CHARLES L. ABERNETHY, OF NORTH CAROLINA

Mr. ABERNETHY. Mr. Speaker, I move to strike out the last word.

The SPEAKER. The gentleman from North Carolina is recognized.

Mr. ABERNETHY. Mr. Speaker and gentlemen of the House, the entire medical profession in the great State of North Carolina are very much interested in the passage of this bill. In fact, I have been petitioned and I am sure the other members of our State delegation have been petitioned to support it. I think it is a very fitting memorial, and I think it is appropriate that it should have been introduced by that distinguished Representative who was at one time the Governor of the Panama Canal Zone, the distinguished gentleman from Kentucky [Mr. Thatcher].

I take great pleasure in supporting the bill. I think it is very magnanimous on the part of the South and Central American countries, and particularly the Republic of Panama, to offer to cooperate. I understand the Republic of Panama is to contribute the greatest part of this money. I think the Republic of Panama is to contribute $500,000 or more for the construction of the proposed laboratory building. I think the passage of this bill is the best thing we can do from the national standpoint, from sanitary and health needs, and from the standpoint of admiration for and as a memorial to one of the world's greatest physicians. [Applause.]

SPEECH OF REPRESENTATIVE CHARLES R. CRISP, OF GEORGIA

Mr. Crisp rose.

The SPEAKER. The gentleman from Georgia is recognized.

Mr. CRISP. Mr. Speaker, the greatest thing in life is to render unselfish service, and no man has rendered greater service to humanity than General Gorgas. Therefore I think it is highly commendable for the North and South and Central American Republics to do him honor, and in doing so to continue his great service in helping humanity. The medical profession in my State are unanimous in favor of the passage of this bill. I can add nothing to what has already been said. I simply asked to be recognized to announce my approval of the measure and to say it will afford me great pleasure to support it. [Applause.]

SPEECH OF REPRESENTATIVE HENRY ST. GEORGE TUCKER, OF VIRGINIA

Mr. TUCKER. Mr. Speaker, I rise for just a moment to express the very great pleasure it gives me to be able to vote for this bill.

I did not know "General" Gorgas; I knew "Willie" Gorgas. We were classmates for four years during the Civil War in the city of Richmond, down at Fifth and Carey Streets, being taught by one of the noblest women that ever lived, Mrs. Anne Munford. We were disturbed frequently in our work by the sound of cannon around us. I was at his house frequently as he was at my house. I remember his mother and father. His father was the head of the Confederate ordnance department.

I merely rise to say that there never was a boy of my acquaintance that showed in boyhood what was in him as did William C. Gorgas. I remember my dear old teacher telling me—she passed away only a few years ago—that she was very fond of me as a pupil, but she said:

> You know, Harry, that Willie Gorgas was always the favorite of everybody in the school, myself included.

I congratulate the committee on having selected such an appropriate memorial to this great man, which will be indorsed by an admiring and loving people. [Applause.]

SPEECH OF REPRESENTATIVE HENRY W. WATSON, OF PENNSYLVANIA

Mr. WATSON. Mr. Speaker, I am in favor of this bill. It was not my purpose to speak upon it until some one raised the question as to the location of the laboratory. I believe that such a laboratory should be placed in the Torrid Zone, because in the Torrid Zone is where diseases take root, grow, and spread.

Last summer I visited what is called in common language "the snake farm," at Sao Paulo, a laboratory maintained by the Government of Brazil. They have done such good work that they have reduced the deaths from snake poisoning by nearly 75 per cent. They are creating serums which will prevent many of the diseases and many of the fevers, but they have not yet created a serum to prevent pneumonia. There are kept in the stables of the laboratory for serum purposes about 100 horses. When the poison is extracted from

the snakes the poison is inserted into the blood of the horses and the blood is then extracted after 10 days and made into a serum.

Mr. Speaker, I ask unanimous consent to extend my remarks upon this subject.

The SPEAKER. Without objection, it is so ordered.

There was no objection.

The SPEAKER. The question is on agreeing to the committee amendment.

The committee amendment was agreed to.

Mr. PORTER. Mr. Speaker, I offer an amendment.

The SPEAKER. The gentleman from Pennsylvania offers an amendment, which the clerk will report.

The Clerk read as follows:

Amendment offered by Mr. Porter: On page 2, in line 12. after the words "and (3) That," insert the words "in such manner as the President may determine."

Mr. PORTER. Mr. Speaker, the purpose of the amendment is to fix more definite the powers of the President in the appointment of the American representatives on this commission.

The SPEAKER. The question is on agreeing to the amendment.

The amendment was agreed to.

The bill was ordered to be engrossed and read a third time, was read the third time, and passed.

On motion of Mr. Porter, a motion to reconsider the vote whereby the bill was passed was laid on the table.

REMARKS BY REPRESENTATIVE JOHN W. SUMMERS, OF THE STATE OF WASHINGTON, MAY 10, 1928

Mr. SUMMERS of Washington. Mr. Speaker, it is refreshing to note that the Congress of the United States within the past few weeks has paused in its consideration of routine legislation and has given thought to the health of the Nation and the world.

Two bills recently passed by the House and Senate dealing with important matters relating to scientific studies and the public health serve to remind us of the striking advances that have been made in the sanitary sciences within the past few decades.

The development of modern science has been a triumphant march. It is a matter of great pride that medicine has kept abreast of the advancement made in all other branches of science. Gratifying progress has been made in internal medicine, surgery, pathology; in fact, in all branches of medicine. It is of interest to note that preventive medicine, hygiene and public health laws have also kept apace with the growth of knowledge.

H. R. 8128, a bill to authorize a permanent annual appropriation for the maintenance and operation of the Gorgas Memorial Laboratory in Panama, which has been passed by the House and Senate and is now a law, is one of the important bills to which I refer. This laboratory is intended to be a permanent memorial to Dr. William Crawford Gorgas, former Surgeon General of the United States Army.

It is fitting that such a memorial be established in Panama, where General Gorgas demonstrated the most striking application of the

principles of modern sanitation that has been made within recent years.

The Panama Canal could not have been constructed, and the American efforts would have failed had it not been for the success of General Gorgas in conducting the sanitary and health work of the Isthmus.

The field of tropical and medical research is large, and the needs involved are great. The present research facilities are limited, and it appears that there is no likelihood of the completion of this work for a great many years to come. The studies in tropical diseases have scarcely been touched in comparison with what is needed.

SANITATION AND ANCIENT SCIENCE

Such great strides have been made in public health, preventive medicine, and hygiene within the past few decades that many persons regard sanitary science as of modern origin. This is not the case. In the history of early peoples we almost invariably find that the health of the population was a subject of serious consideration and legislation.

The Egyptians filtered the muddy water of the Nile at an early date. They gave special attention to their food and to child welfare. They recognized the danger of floods to health and resorted to preventive measures. Joseph's Well, near Gizeh, was excavated through 300 feet of solid rock and was an object lesson in obtaining pure water. Reservoirs were common in ancient times. The Chinese for thousands of years have used alum in the clarification of muddy waters.

The Bible reveals that Moses proposed and enforced many excellent sanitary measures. The Mosaic laws contain specific directions for personal cleanliness, the purification of dwellings and camps, the selection of healthful and the avoidance of unhealthful food, the isolation of persons with contagious diseases and various other points bearing on the welfare of the race. The inhabitants of old India also gave attention to their food, habitations, games, exercises, and the isolation of children in the case of infectious diseases.

The wonderful physical development of the ancient Greeks is well known. The Romans were among the first peoples to recognize the value of ventilation and to provide for a good supply of fresh air. They brought fresh water from the mountains and provided underground drains for the disposal of sewage. Amongst their military operations the Romans found time to construct the "Cloaca Maxima," some 2,400 years ago, which not only served for the removal of refuse, but also helped to drain bogs and marshes. It constitutes the principal sewer of modern Rome. Aqueducts were constructed to cover miles of the surrounding plains. Their remains, many of which have been restored, are now used for their original purpose. At one time there were 14 large and 20 small aqueducts bringing water to Rome, some of which carried the water from a distance of more than 50 miles. During the reign of Tiberius and Nero, the per capita supply of water was over 1,400 liters a day. It is a matter of historical record that between 400 B. C. and 180 A. D., about

800 public baths were installed among the "thermæ carcallæ," which accommodated 3,000 bathers at one time. These things evidence the munificence and abundance with which the first of sanitary requisites were supplied to Rome.

CHOLERA WIDESPREAD

In the thirties, forties, fifties, and sixties of the last century cholera was by no means unusual in many places in the United States. Congress passed special legislation relative to outbreaks of cholera in 1832 and in 1866.

More than 50,000 persons died of cholera in 1831–32 in 18 cities of Europe. In Hungary during this same epidemic, 1 person out of every 46 died of this disease. In Montreal the rate was given as 1 person out of every 20; in New York, 1 person out of every 100; and in Albany, 1 out of 77. As late as 1873 cholera was epidemic in several of our States.

Prior to the Civil War yellow fever was so common throughout the South, particularly in New Orleans, Galveston, Mobile, Key West, Pensacola, and Charleston, S. C., that some writers spoke of these places as endemic centers. Philadelphia, Baltimore, New York, and other cities suffered epidemics of yellow fever. In fact, no less than 90 epidemics of yellow fever have made their appearance in the United States at different times.

DISCOVERIES OF PASTEUR

Modern public health may be said to date from the discoveries of Louis Pasteur, a great French scientist. His work was largely in the field of bacteriology and was carried on from about 1857 to 1885. Pasteur's work successfully disproved the belief, which was almost universal at that time, that putrefaction, fermentation, and similar processes were the result of what was spoken of as the "spontaneous generation" of lower forms of life; that is, that such forms could originate de novo from inanimate matter. The work done by Pasteur included the discovery that certain diseases in both man and some of the lower animals were due to the growth and multiplication of microscopic disease-producing plants, which are ordinarily spoken of as bacteria.

It was not until the late eighties of the past century, however, that the leaders of medical science either in Europe or in America generally accepted the demonstrations and existence and the pathologic significance in health or disease of the bacteriological discoveries of Pasteur.

DOCTOR JENNER AND THE MILKMAID

It should be recalled that the demonstration of the value of vaccination against smallpox by Edward Jenner about the year 1798, was the first notable victory of modern times over disease and pestilence. Until that time smallpox reaped a large harvest of lives every year, and was as common as measles is at the present time. Jenner's demonstration antedated the work of Pasteur by about three-quarters of a century.

In order to appreciate the importance of the discovery and use of vaccination against smallpox it is of interest to know something of the historical development of this important contribution to the prevention of disease.

At one time smallpox was the most common and the most dreaded disease in the world. Before the days of vaccination only 5 or 10 people out of every 100 escaped smallpox, and of those who contracted the disease about 1 person out of every 4 died. Many of those who recovered were scarred, maimed, or even blinded for life. The disease was so feared, and people were so sure that they would get it, that many of them had themselves inoculated with smallpox so as to have it and get through with it. Many of those who were thus voluntarily inoculated with smallpox died, but the death rate among the inoculated was much less than among those who contracted the disease in other ways.

While a medical student Edward Jenner learned from a milkmaid that persons who had been inoculated with cowpox were not subject to smallpox. This fact impressed Jenner, and when he finished his medical course he began to seek out people who had been inoculated with cowpox and persuaded them to allow him to inoculate them with smallpox. After he had inoculated 10 persons with smallpox and found that in no case did the disease develop, he decided to persuade someone who had never had either cowpox or smallpox to submit himself to inoculation, first with cowpox and later with smallpox.

This he did for the purpose of further determining the value of cowpox as a protection against smallpox. This experiment was made on May 14, 1796, when Jenner inoculated a young lad named James Phipps from an eruption due to cowpox—the virus, as it was called, being taken from a vesicle or sore from the hand of Sarah Nelms, a young girl who had contracted cowpox from milking an infected cow. In describing the experiment, Jenner says:

> In order to ascertain whether the boy, after securing so slight an affection of the system from cowpox virus was secure from the contagion of smallpox, he was inoculated with variolous matter immediately taken from a smallpox postule after slight punctures and incisions were made in both arms, and the smallpox matter was carefully inserted, but no disease followed.

Jenner's experiment was repeated many times in England, and the practice of vaccination from arm to arm was soon begun.

Vaccination was first practiced in the United States by Dr. Benjamin Waterhouse, of Harvard Medical School. At the instance of President Jefferson, an act was passed by Congress in 1813 to encourage vaccination. This act provided, among other things, for the free transmission of vaccine virus through the mails, and the appointment of vaccine agents. This act was repealed in 1822. The reasons advanced for the repeal of the 1813 law relating to vaccination, as disclosed by the record of the proceedings in Congress, were that the subject was one properly within the province of the several States, locally, and that the law constituted a monopoly and discouraged medical men from exerting themselves in promoting vaccination.

MODERN SANITATION

One of the important developments of recent years is the awakening of a sanitary conscience. To some men it is a new thought that the care of the body and cleanliness of surroundings are very important factors in the comfort, safety, and even the life and health of their fellowmen. Preventive medicine of the present day teaches that we must not only safeguard our own body against infection and keep our own body clean for our our own sakes, but quite as much for our neighbors' sake. It teaches the lesson of unselfishness, of community and public interest. One man alone can not fight successfully against the common foe, disease; it takes the combined and intelligent cooperation of the community.

The new public health developed within the past half century has given to us an entirely different conception of many of the factors that enter into the preservation of health and protection against disease. Many an old theory has been disproven. The old theory of the spread of disease through fomites or inanimate things, has been shown to be of far less importance than was at one time supposed. It is known that, in fact, this occasionally happens, especially with diseases spread through discharges from the mouth, nose, and throat. Instead of suspecting letters, books, umbrellas, walls, furniture, and other unlikely objects, which were formerly disinfected or destroyed, we now think of things recently moistened with saliva, such as drinking utensils, towels, toys, furniture, food, fingers, and flies. Many of our sanitary procedures of 50 years ago now require considerable modification in the light of present-day science.

Our conception of public health has been broadened so that modern public health is concerned not only with stamping out communicable disease, but with a much broader aspect of public health. There are many preventable defects which can be reached, especially in the school child and industrial worker. Present-day preventive medicine must concern itself with problems of heredity and eugenics. The questions of immunity from disease, health hazards of occupation, the food supply, including milk and water, must be given consideration.

Within recent times there has come to exist a broadened public vision as to the duty of governments to individuals and to groups of individuals. This has led to progress which, generally speaking, has been initiated by far-seeing volunteers and directed along practical channels by official bodies, which is the proper sequence for progress among self-governing people. Thus in our own time there has been a marked development of public-health activities and an increased appreciation of the obligations of governments and of the public, especially to those who need help because of mental or physical infirmities, as well as to those engaged in vocations either intrinsically detrimental to health or else productive of pecuniary returns so small as to render well nigh impossible home environments and living conditions conducive to health.

In the States this sentiment has been evidenced by the broadened powers and increased efficiency of their health departments, the passage of laws regulating child labor and fixing hours of labor for women as well as for those engaged in hazardous occupations, lessen-

ing of occupational hazards, better provision for the care of tuberculosis and mental diseases, and by intelligent efforts to eradicate typhoid fever, malaria, and other diseases having a bearing on the public health. Very significant, too, has been the recognition of the economic value of preventive medicine by great industrial organizations and life-insurance companies.

All conditions which tend to decrease the mental and physical fitness and efficiency not only of the present, but also the future generations, come within the sphere of interest of the ideal public-health servant who must keep step with the epidemiologist, the psychiatrist, the pediatrist, the syphilographer, the great industrial enterprises, and the sanitary engineer, as well as with the hospital and with the general practitioners. He can least of all afford to lose touch and sympathy with the individual sufferer.

VOLUNTEER HEALTH AGENCIES

The interest of the public is shown by the efforts of numerous volunteer organizations in the initiation and development of health movements throughout the several States. These are encouraging signs of a splendid future.

There is a field of usefulness for the volunteer health organizations when wisely directed. They must form the connecting link between many of the public and governmental agencies. Official health organizations and volunteer organizations must work together in close harmony.

It has been said that public health is purchasable, but the people are entitled to have skilled purchasing agents, whether the money comes from them in taxes or in voluntary offerings. It can not be had merely with sums of money, however large, nor with untrained, irresponsible personnel.

It is evident, therefore, that the foundation for that ideal condition for which we hope when the conquest of preventable diseases shall at length be accomplished, is being laid by an aroused public sentiment over widening areas of our country, and by increasing efficiency of Federal, State, and local health officers.

The very cornerstone of an effective national public health organization is the local health officer. The office must be one of sufficient dignity by adequate remuneration and certainty of tenure as to attract the right type of young men, and facilities which now exist in only two or three schools should be given in every medical school to educate men for these positions.

The State departments of health are making notable progress, but, with few exceptions, they are hampered in their usefulness by totally inadequate compensation to attract men fitted for the broader problems of modern preventive medicine.

UNITED STATES PUBLIC HEALTH SERVICE

No other country approaches the United States in efficiency of national health work. Our problem is peculiar to our form of government. The United States Public Health Service has been builded upon sure foundations. It is the result of evolution and

gradual development, and its adaptability to changing conditions has been shown in the past few years.

The history of the United States Public Health Service dates back more than a century and a quarter. It had its origin in the old Marine Hospital Service, which was first authorized by act of Congress approved July 16, 1798.

The evolution of public health functions from such a service was along natural lines. The medical officers, in providing care for the American merchant marine, were often the first physicians to diagnose such diseases as cholera, yellow fever, smallpox, and the like, which were being imported into the United States. This was especially the case in the southern ports as regards yellow fever, and during epidemics when called upon by State and local health authorities the President authorized the Marine Hospital Service to aid the health authorities in giving relief in the control of these diseases.

In 1878 Congress authorized the use of the Marine Hospital Service in an extensive way as the Federal health service. The act approved April 29, 1878, gave very broad powers to the service to cooperate with State and local health authorities in the control of diseases, especially yellow fever. The above-mentioned act was, for the most part, a quarantine law to prevent the introduction of contagious and infectious diseases into the United States. In 1890 Congress passed an act which utilized the Marine Hospital Service as the Federal health agency for the prevention of interstate spread of disease.

FEDERAL, STATE, AND LOCAL COOPERATION

The act of February 15, 1893, extended the powers of the Marine Hospital Service to cover the control of all infectious and contagious diseases in cooperation with State and local health agencies.

After the act of 1893, which recognized the Marine Hospital Service as the Federal health service, Congress continued to impose additional health functions upon the service, and on July 1, 1902, passed the act which changed its name to the Public Health and Marine Hospital Service and made it a health service in name as well as in functions. The larger part of its functions up to this time had been the combating of epidemics, especially of those of yellow fever, which from time to time swept over the country.

While the public-health functions of the service had their inception in the prevention of the introduction and spread of quarantinable diseases, their development in logical sequence was brought about by growing public opinion. In addition to the quarantine and hospital functions, the activities of the service include research and educational work. The investigative functions began with the study of such diseases as yellow fever and cholera in the early years of the existence of the service, but it was not until July 1, 1902, that Congress authorized the establishment of the Hygienic Laboratory for that purpose. Since this legal authorization, the Hygienic Laboratory has grown very rapidly until it now stands as one of the foremost research institutions in the world.

From the control of epidemics the Public Health and Marine Hospital Service began to study control measures for the more common contagious and infectious diseases, such as typhoid fever, diphtheria,

scarlet fever. The history of the remarkable control of typhoid fever which has taken place in the United States within the past 20 years is a part of the history of the Public Health Service, in cooperation with State and local health agencies, and now typhoid fever, which formerly took a total of more than 50,000 lives annually of the population of the United States, is responsible for the death of something less than 10,000.

The development of the health functions of the Public Health and Marine Hospital Service continued until finally Congress by the act approved August 14, 1912, changed the name again to its present one, the United States Public Health Service, and at the same time gave it very broad powers to investigate the diseases of man and the pollution of navigable streams and lakes of the United States.

There is not so much duplication, either in human endeavor or financial output, in the Federal medical and health activities as is supposed, but there is a lack of unification and coordination which all are interested in correcting.

The legitimate functions of the Federal Government in public-health matters in the United States appear to be—

First. The supervision and control of essentially national and international health matters, such as the protection of the country from the introduction of disease from without and the control of the interstate spread of disease.

Second. Research and investigation of public-health problems.

Third. Cooperation with State and local health authorities in matters when necessary and desired by them.

Fourth. The formulation of minimum health standards.

Fifth. The dissemination of information with regard to health matters for the education of the general public.

Sixth. Furnishing leadership and stimulation in the solution of health problems.

Seventh. Medical examinations of arriving aliens or aliens destined to enter the United States.

Eighth. The furnishing of medical care and treatment to certain beneficiaries specified by law.

Ninth. The supervision and control of biologic products sold in interstate commerce.

The United States Public Health Service now possesses all the authority which can be granted to it under the present Constitution. The problem, therefore, is to develop the Public Health Service and supply it with adequate funds and trained personnel.

NEW LEGISLATION

The House of Representatives passed on March 7, 1928, H. R. 11026, which is designed to render more efficient the Federal health activities. This bill provides for the coordination of Federal health activities, and gives to the Public Health Service the facilities necessary for it to function more efficiently as the central health agency of the Government. This bill was drafted by the health agencies of the country represented in the National Health Council, after a study of Federal health problems in cooperation with the Bureau of Governmental Research. It is approved by national medical, dental,

health, and engineering associations. The principles of the bill likewise have been indorsed by the United States Chamber of Commerce and by the American Federation of Labor.

Although the coordination of Federal health activities has been agitated for years, never before has such unanimous indorsement been given to any specific measure by the public-health agencies of the country.

Through successive acts the Congress has provided broad authority for Federal public-health activities. For the most part the discharge of these activities has been imposed upon the United States Public Health Service. Accordingly that service has been developed as the essential health agency of the Government. Although the policy long has been established and reaffirmed by Congress that there should be thorough cooperation of the Public Health Service with State and local health authorities, no such general provision has been made for similar cooperation with other governmental establishments. In consequence public-health work has been undertaken by various Government departments independent of, and uncorrelated with, the activities carried on under the basic health laws mentioned.

In special instances these health functions of other departments have been recognized as requiring cooperative effort, and this has been provided for by law. In this class may be mentioned the medical examination of immigrants, measures in foreign ports for the sanitary protection of American commerce, the sanitation of mines, the sanitary protection of shellfish areas, and the oversight of therapeutic agents. Officers of the Public Health Service have been detailed, therefore, under specific provisions in aid of these matters, to the Immigration Service, the Consular Service, the Bureau of Mines, the Bureau of Chemistry, and in the case of the Bureau of Fisheries the work is correlated.

It is highly important, from the health standpoint, for this policy to be extended so as to apply to all agencies of Government not specifically provided with medical and sanitary services. The need to strengthen the health activities of the Government and to bring about their proper correlation has long been recognized. In order to insure the orderly development of Federal health work and to prevent waste, authority to this end should be established. As stated by Dr. William H. Welch, of Johns Hopkins University, at hearings before the congressional committee:

> The growth of the Public Health Service to-day has placed it in the front rank among corresponding agencies of government in other countries. The service contains in increasing numbers leading experts in the field of preventive medicine and public health in this country * * * who can express authoritatively the best knowledge which we have as regards the promotion of health and the prevention of disease.

SCIENTIFIC RESEARCH FIRST

Scientific research is the most important public-health function of the Federal Government. By means of a proper system of correlation, duplication and useless effort would be avoided and greater progress would be assured in the solution of important health problems which influence adversely the national welfare.

DIPHTHERIA

Diphtheria is one of the communicable diseases of which we know the cause and mode of transmission, and for which we now possess a specific preventive and curative agent of great potency. We also have now a reliable test, called the Schick test, which indicates whether or not a given individual is susceptible to the disease. The introduction of the toxin-antitoxin mixture, which provides permanent immunity against diphtheria, places in the hands of health authorities a most valuable weapon for further combatting this disease. The death rate from diphtheria has responded quickly to the medical discoveries of the past half century. The first aid to the control of this disease was Von Behring's discovery of diphtheria antitoxin. In the period immediately following the general introduction of this antitoxin in the treatment of diphtheria (1894–1905) the death rate in 23 American cities declined at the rate of 10.2 per cent per year.

In 28 American cities for which the rates have been computed the decline has been from about 116 per 100,000 in 1890 to 8 per 100,000 in 1925. This extraordinary achievement in public health will probably stimulate campaigns for the better control of other communicable diseases.

THE PASSING OF YELLOW FEVER

Probably no brighter spot illuminates the highway of scientific knowledge and no more interesting chapter exists in history than that which marks the passing of yellow fever. To those who recall the appalling epidemics of only a generation or two ago, and the panics which they produced, this achievement seems little short of miraculous. Yellow fever has not been epidemic in the United States since 1905, and it has been out of reckoning in the United States for several years past except for the important work of safeguarding our ports and frontiers. Within recent years the attack on yellow fever has been extended to Mexico and Central and South America. It is the hope of sanitarians that the Western Hemisphere will eventually be rid of one of its worst plagues. Dr. Carlos Finlay discovered the part played by the mosquito Aedes egypti in causing yellow fever in 1881, but the announcement received no credit until about 1900. Early in 1900 Dr. H. R. Carter, of the United States Public Health Service, showed that a lapse of 12 to 15 days is necessary before a case of yellow fever becomes dangerous to others. Following this came the epoch-making work of Dr. Walter Reed and his coworkers, showing that yellow fever is produced by a mosquito bite, by infection of blood, and by injection of filtered blood serum, thus proving the existence of a filtered virus. These observations were confirmed by Rosenau, of the Public Health Service, in 1903.

MALARIA

The parasite which causes malaria was discovered in 1880. However, it was not until about 1897 that Sir Ronald Ross made the important discovery of how the malaria parasite gets into the blood

of man. It was through his studies that it was shown that the Anopheles mosquito was the means whereby the malaria parasite was spread from person to person. The development of methods of attack on malaria soon followed the discovery of the rôle the mosquito played in transmitting malaria. The application of this knowledge relating to malaria by public-health authorities has been successful in ridding large areas of malaria infection.

TUBERCULOSIS RETREATS

Half a century ago tuberculosis caused more than 320 deaths annually in every 100,000 of the population of Massachusetts. Probably this rate is not higher than the rate for other States for which records are not available. To-day tuberculosis causes less than one-third of this number of deaths per 100,000. While the reduction of the death rate from tuberculosis has undoubtedly been due, in part, to natural causes, it is probable very much more has been the result of public-health activities. Among the specific measures that have contributed to this result are improved and more accurate methods of diagnosis, the pasteurization of milk, the abolition of the common drinking cup and other utensils used in common, the inspection of meat products, and improved housing.

MILK AND PUBLIC HEALTH

The relationship of milk supplies to the public health has long been recognized as of great importance. Through the medium of milk many diseases are spread, among which may be mentioned diphtheria, scarlet fever, tuberculosis, typhoid fever, cholera, dysentery, and septic sore throat. Diseases spread by infected milk have also been the cause of high mortality rates among children. Louis Pasteur, of France, found that milk would not rapidly ferment or sour if raised to a certain temperature, and kept that temperature for a given period of time. This is what is now generally known as the process of Pasteurization, so named from the man who first developed this method of destroying disease-producing germs in milk.

The sound principles of the effective sanitary control of milk have been established to the satisfaction of the scientific world. These principles are sufficiently well understood to form the basis of effective milk legislation and milk regulation. It only remains to bring to the attention of the general public the complete realization of the food value of milk and of the great principles of sanitary control of milk in order to produce a satisfactory solution of the milk problem in every community.

PURE FOOD LAWS

The first attempts at food control were made by local communities, generally by cities, where the residents were removed from actual contact with the producers of food. The laws which were first enacted usually related to specific productions, few embraced foods in general. One of the earliest laws regarding foods in general was enacted by the State of Illinois in 1874. In 1906 the Federal law relating to food and drugs was enacted. Within two years after the passage of this act at least 30 States amended or enacted food laws.

Many of these followed the general lines of the Federal law, but many differences remain, and the ideal uniformity has not yet been reached. The pure food and drugs act of 1906 has been of great value in protecting foods sold to the public against adulteration. Improved methods of canning, preserving, and refrigeration of foods have also been introduced during the past 50 years.

SCARLET-FEVER CONTROL

Recent studies have developed a serum which is believed to be of considerable value in the treatment of scarlet fever. Drs. George F. Dick and Gladys H. Dick, of Chicago, have described a test which is useful in determining whether given individuals are susceptible to scarlet fever. It is believed by public-health officials that this test will be of material value in the control of scarlet fever. In the early development of preventive medicine the suggestion was made that preventive medicine and curative medicine must proceed along divergent paths. In this connection it is interesting to note that modern theory and practice have brought about a result entirely different, and at the present time it is frequently difficult to say where one branch begins and the other ends. Curative medicine in its methods has become largely preventive and now deals with immunization and prevention as a part of its work. The development of the Schick test for diphtheria and Dick test for scarlet fever are an example of this, while in matters of tuberculosis and venereal disease it is frequently difficult to note any line of demarcation between cure and prevention.

PELLAGRA PREVENTED

Pellagra has long been included among the diseases associated with food, for the evidence has indicated that it is caused by a deficient diet. This disease was first recognized in the United States in 1864, after which it was more or less overlooked until 1906, when cases were reported from the Alabama Insane Asylum. In subsequent years many cases were reported in various parts of the country, particularly in the South. This disease has been made the subject of special study by the United States Public Health Service. Dr. Joseph Goldberger and other officers working with him have shown that by diet alone the disease has been produced in subjects, and by the same means they have prevented and cured it if not too far advanced. It is believed that the case is reasonably proven and the work done by these investigators within the past few years stands as a very important achievement in preventive medicine. Studies in connection with pellagra have indicated the value of brewer's yeast in furnishing a well-balanced diet. Acting on this knowledge, extensive use has been recently made of brewer's yeast in the flooded area along the Mississippi River in the prevention and cure of this disease.

SPOTTED FEVER

Rocky Mountain spotted fever is a disease prevalent in certain sections of the western part of the United States. In the area where this disease exists a number of cases occur annually, particularly in

persons engaged in outdoor pursuits. For more than 25 years the Public Health Service has been conducting studies relating to this disease. As a result of these studies there has been developed by Drs. R. R. Spencer and R. R. Parker a vaccine which the evidence at hand tends to show is of great value in preventing the disease and in lessening the severity of cases that develop. The discovery of this vaccine is considered to be one of the important advances in preventive medicine of recent years. With the preparation of this vaccine new priciples relating to the production of vaccines have been developed.

RABBIT FEVER WIDESPREAD

In 1910 officers of the Public Health Service, while engaged in plague-control measures in San Francisco, Calif., observed a plague-like disease in rodents. This disease, although resembling bubonic plague, was found not to be plague. It was not until 1921 that this disease was identified as rabbit fever, or tularaemia. Studies by Dr. Edward Francis, of the Public Health Service, has shown its importance and wide prevalence. The presence of this disease in almost all of the States in the Union has been reported. It has also been identified in Japan. The studies leading up to the recognition and description of this disease are an important landmark in the recent progress of preventive medicine.

VENEREAL DISEASES

Fifty years ago but little thought was given to the public-health aspects of venereal diseases. With the development of salvarsan, the perfection of the Wassermann reaction, and other bacteriological advances in this field, important weapons have been placed in the hands of public-health authorities for the control and eradication of these diseases. There has been a general awakening on the part of the public to the importance of campaigns directed against these diseases, and, as a result, many State and local boards of health are now conducting vigorous antivenereal-disease campaigns.

HOOKWORM ERADICATION

In 1902 Dr. Charles W. Stiles, of the United States Public Health Service, demonstrated that the widespread anæmia present among the population of the Southern States was due to hookworm disease. This discovery is one of the most important public-health advances of the century, and through the campaign for the eradication of hookworm disease which followed this discovery a great impetus has been given to public-health work generally throughout the Southern States as well as the entire country.

WATER

The history of water purification is closely associated with the general progress in sanitation and public health within recent years and with the rise of the modern science of preventive medicine.

Judged by our present-day standards the water supplies of the United States of a few years ago were low. The germ theory of the transmission of disease by means of polluted water was not generally accepted until less than 50 years ago, and water purification was practically an unknown art. Water analyses were confined to mineral constituents. A study of the records of those times shows many notable typhoid epidemics. To-day typhoid fever is a vanishing disease, except in communities that are negligent in applying the well-known principles of modern sanitary science. From the standpoint of preventive medicine an outbreak of typhoid fever is a reproach to the sanitation and civilization of a community. In 1877 the death rate from typhoid fever in the United States was about 45 per 100,000. In 1910 it was 23.5, and in 1926 it was 6.5.

BIRTH, DEATH, AND DISEASE STATISTICS

The collection of statistics relating to births, deaths, and the prevalence of disease has made rapid development throughout the civilized world during the past 50 years, particularly the collection of information relating to deaths and the prevalence of disease. In the United States the development of a death registration area and a birth registration area have been brought about. A city or State is admitted to the death registration area only if it can be shown that 90 per cent of the actual deaths are being reported. A similar requirement is made for admission to the birth-registration area.

In 1877 there was no registration area in the United States. In 1880 a registration area was established comprising 17 per cent of the population. In 1900 the collection of annual statistics of deaths was begun, 40.5 per cent of the population being included in the area. In 1928, 93.5 per cent of the population was included in the registration area. Figures for the United States or for considerable sections of the country earlier than 1900 are approximate only, as only a few States and cities have reliable data earlier than that year.

Although the United States was collecting and publishing current information relating to the prevalence of disease before 1912, the data were from scattering sections of the country and incomplete. In 1912 a standard form for reporting notifiable diseases was agreed upon at a conference of State and Territorial health authorities with the United States Public Health Service. In the same year reports for annual prevalence of disease for cities was begun, including only a few cities. Cities having a combined population of approximately 50,000,000 were included in the compilation for 1926. The data for States were first published in 1913. These reports were incomplete and included only about 17 States. In 1926 reports were received from 47 States and also the District of Columbia, Territory of Hawaii, and Porto Rico.

In preventing and controlling the spread of disease, prompt information is necessary in regard to the locality of occurrence and conditions under which it is occurring. Modern means of transportation and the increase in the rate and amount of travel by rail, by automobile, and by airplane greatly facilitate the rapid dissemination of communicable diseases and greatly emphasize the need for such information.

But few States required the reporting of communicable diseases a few years ago. At the present time every State in the Union has laws or regulations requiring the reporting of certain diseases to officials whose duty it is to record and act on the information.

BOARDS OF HEALTH

In 1869 only three States, Massachusetts, California, and Virginia, had established boards of health. The health department of the District of Columbia was established in 1870. By 1876 only 12 States had developed boards of health. In 1891, 36 States had health departments. Every State in the Union now has a health department.

It is said that a board of health was established at Petersburg, Va., in 1780; one was certainly established in Philadelphia in 1794, and one in New York in 1796. By 1873, 32 cities had established boards of health. Every city of any magnitude in the United States now has an organized health department.

YAKIMA COUNTY LEADS

A county in my district has the distinction of having the first whole-time county health department to be established in the United States. I refer to Yakima County, Wash., where the first whole-time county health department was established in 1911. In 1928, 414 counties in the United States are provided with local health service under whole-time health officers. During the past 12 years the Public Health Service has undertaken a program of cooperative demonstrations in rural health work, from which have come many sanitary and economic benefits to the communities and stimulation for the development of whole-time county health service.

At the present time there is in every State some regular provision for local health organization.

INTERNATIONAL SANITATION

With the great progress of the public health movement throughout the world during the past half century, advances have been made in international sanitation also. The necessity of international sanitary agreements and standards were first emphasized by the cholera epidemics which occurred in Europe during the early eighties and nineties. The first international sanitary conference was held in Rome in 1885. The United States was not represented at this meeting. Other international conferences in which the United States was represented were held in different European cities at varying intervals. The international sanitary convention of Paris was signed ad referendum December 3, 1903. The United States Senate by its resolution of March 1, 1905, ratified this convention. The exchange of ratifications between the representatives of the participating nations took place in Paris, April 6, 1907. This agreement, which modified the measures necessary to guard against the invasion of bubonic plague and cholera, emphasized the responsibility of the different governments to each other in matters pertaining to public health.

Following another international sanitary convention held in Rome in December, 1907, the International Bureau of Public Hygiene of Paris was organized with the object of facilitating the collection of facts concerning the public health, especially those relating to the importance of recognizing the various stages of infectious diseases and the measures to combat them. The organic statutes organizing an International Bureau of Public Hygiene authorized direct communication with the principal health authorities of the participating governments. The foundations of the International Office of Public Hygiene were laid as for an institution that is to be permanent. In organization it resembles the Permanent International Postal Bureau.

The latest revision of the International Sanitary Convention was signed in Paris June 21, 1926. The United States Senate on March 22, 1928, ratified this revision of the sanitary convention.

The Pan American Sanitary Bureau of American Republics was founded by the International Conference of American States held in the City of Mexico in 1901. The object of this organization is to discuss freely all matters relating to the public health, particularly those which affect the American Republics, and to encourage the execution of the resolution of agreements decided upon by the conventions. The Pan American Sanitary Bureau of American Republics holds meetings at intervals of two or three years.

As a result of the Pan American Sanitary Conference held in Habana, November, 1924, there was adopted the present Pan American Sanitary Code which is believed to be one of the most comprehensive instruments of this kind that has ever been adopted.

TYPHOID FEVER WALKS THE PLANK

The bacillus which causes typhoid fever was discovered in 1880. Subsequent studies showed that this organism may be spread to persons through food, fingers, and flies. In 1896 Widal announced the agglutination test for the diagnosis of typhoid fever. Although protective inoculation by means of vaccine, against typhoid fever, was practiced as early as 1895, it was not until several years later that inoculation for the prevention of typhoid was practiced on an extensive scale.

This was made effective on a large scale in the United States Army in 1909, where its use was shown to be highly satisfactory. Formerly it was an axiom that typhoid fever was a scourge of all armies. In the Spanish-American War 1 man out of every 6 contracted typhoid fever in an army of 107,973, and this disease caused 1,580 deaths in the same army. During the World War 1 man out of every 3,756 in an army of approximately 4,000,000 contracted typhoid fever, and there were only 213 deaths from this disease. This remarkable record is due, in large measure, to the protective inoculation against typhoid fever given every person entering the Army.

In 1900 typhoid fever was excessively prevalent in the country as a whole. Approximately 35.9 persons out of every 100,000 died of the disease in that year. Estimating 10 cases for each death, there were, on an average, 359 cases per annum out of every 100,000 of the population. This was in striking contrast to the low mortality rates of the older countries in northwestern Europe.

Preventive medicine has developed to such an extent that we are sometimes prone to have a false sense of security and neglect important fundamentals of sanitation. It has been stated that a large epidemic of typhoid fever is impossible in a city with present modern sanitary conditions. It was said that a city provided with thoroughly safeguarded water supplies and adequate control of milk and foodstuffs need not fear the epidemic prevalence of typhoid fever. However, if any of these essentials of sanitation are neglected, even for a short time, a disastrous epidemic may occur. As an example of this, it may be stated that during 1927 there occurred in the city of Montreal, Canada, an outbreak of typhoid fever in which more than 5,000 cases occurred and approximately 524 deaths were recorded. This tragic instance serves to impress the necessity of adequate public-health protection and demonstrates that eternal vigilance is the price of sanitation.

FILTERED WATER

A most interesting and important phase of development in public-health work has been the improvement of the quality of public water supplies by filtration plants and other purification processes. In 1890 only about 1.5 per cent of the urban population of the United States was supplied with filtered water. By 1900 the proportion had reached 6.3 per cent. Since that date the development has been very rapid, and it is estimated that now more than 50 per cent of the urban population of the United States is supplied with filtered water.

BUBONIC PLAGUE

Bubonic plague is an ancient disease, and it is difficult, if not impossible, to even estimate the number of deaths for which it is responsible. The plague bacillus was discovered in 1895 by Yersin. Later studies showed the rôle of the flea as the transmitting agent of plague from rat to rat or from rat to man. The work of the Indian Plague Commission, appointed by the British Government, stands as an important milestone in the progress of the knowledge of plague.

Plague first appeared in the United States in 1900 at San Francisco. It was recognized in 1907 in Seattle, in 1914 at New Orleans, and again in 1920. Later, in 1920, it was recognized in Beaumont and Galveston, Tex., and in Pensacola, Fla.

In 1904 it was suspected, in 1908 it was demonstrated that bubonic-plague infection had spread from the rat to the ground squirrel of California. It has been present among these rodents ever since. In spite of outbreaks of plague that have occurred, through broad and vigorous campaigns conducted by the United States Public Health Service in cooperation with the State and local health authorities so far any extended epidemic of the disease has been prevented. Without any knowledge of the mode of spread or method of control of this disease it is not unreasonable to believe that the scourge might have swept the country.

In 1924 plague made its appearance in Los Angeles, Calif., and after an active campaign it was brought under control. Two months later the infection was noted in New Orleans, La., and Oakland, Calif. However, measures for its control were promptly put into

effect. These campaigns for the control of plague have been successfully concluded.

MENTAL HYGIENE

Decided advances in mental hygiene and a fuller recognition of the tremendous importance of this now well-defined branch of medical science have been made within recent years. Facilities for the care and treatment of persons afflicted with various forms of mental diseases have been enlarged and improved. Methods of prevention and treatment have been modified to correspond to the present-day conception of the cause and correction of such conditions. Institutions and colonies for the care of those mentally sick, epileptics, and the feeble-minded have become a necessary part of the public facilities provided by the States and the Federal Government.

The scope of mental hygiene is so great that it is difficult to enumerate its many ramifications. The enormous problem involved in the proper care of the mentally sick and the feeble-minded comes under this category. It is futile to attempt to solve the problem of mental hygiene by building more institutions and increasing the facilities for custodial care. The proper approach to the scientific prevention of both diseases and defects of the mind is the use of every source of medicine and biology. Utilization of any one of the several fields that must be explored—pathology, chemistry, and psychology—will doubtless offer valuable aid in the further study of mental hygiene.

It has been stated that there are in the United States more persons who are mentally sick thon those that are physically ill. The admission rate to the mental hospitals in the United States is now about 90,000 new patients annually.

The recognition of mental hygiene as an important field of preventive medicine and public health is one of the great advances of recent years.

Public health education is a phase of activity in the field of preventive medicine which has developed with the advance of scientific knowledge. During the past few decades very rapid progress has been made in public health and sanitary research. There has been added to our knowledge of diseases and their prevention much more knowledge than is being used. The problem, therefore, arises as to how to present to every individual in a community the important facts he should know about the prevention of diseases and the public health.

To give information on any subject to everyone in a community is a tremendous task and one that can never be finished. It has no end because new facts are being constantly developed through research and new people are being added to each community through new arrivals and the growth of children to the teachable age. The promotion of the public health through health education, therefore, is a task of imparting an increasing mass of information to an ever-changing population. The magnitude of such a task, instead of being a cause for pessimism, should be a challenge to develop a plan whereby each community may feel a sense of responsibility in the very important task of health education.

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The facts needed for health education are developed by the laboratory workers, those engaged in scientific research of all kinds, field workers in epidemiology, vital statisticians, and clinicians who are close observers of their patients.

Failure to eliminate certain diseases is frequently not due to want of knowledge of the cause, but to inability to get this knowledge to those who require it most.

Death rates for the United States as a whole have been reduced from 17.6 per 1,000 in 1900 to 12.2 in 1926.

The infant mortality rate has been reduced from approximately 167 per 1,000 births in 1890 to 72 in 1926. The death rate from tuberculosis has been reduced from 201.9 per 100,000 in 1900 to 87.1 in 1926. Similar results are noteworthy in the reduction of other communicable diseases, and some of the American cities have attained even greater reductions.

At the close of the nineteenth century the average length of human life was between 45 and 50 years. To-day it varies from about 24 years in India to 60 years in New Zealand. The expectation of life in the United States for 1926 was 57.74 years. The best available figures show that the span of life in the United States has been lengthened 15 years since 1870.

Much has been accomplished in preventive medicine and hygiene—much more remains to be done. There is yet too much preventable disease. Many problems are still unsolved. Figures at hand indicate that deaths from diseases of the heart, blood vessels, and kidneys, apoplexy, insanity, and cancer have increased during the past 40 years. Unfortunately the exact cause of many of these and other chronic degenerative diseases is still obscure.

The triumphs of modern preventive medicine and sanitation have been great. The problems for solution are still greater. The true aim of all scientific investigation and public-health endeavor is the prevention of disease and the promotion of public health.

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FURTHER PROCEEDINGS—PASSAGE BY SENATE AND APPROVAL BY PRESIDENT

Upon the passage of the bill by the House—which was by unanimous vote—it went to the Senate and was there referred to the Senate Foreign Relations Committee. That committee, on April 11, 1928, after due consideration, favorably reported the measure without amendment. On April 24, 1928, the Senate—also by unanimous vote—passed the bill.

Thereupon it went to President Coolidge for his consideration and action, and on May 7, 1928, he gave it his approval, and it became a law, in form as follows:

[PUBLIC, No. 350, H. R. 8128, 70TH CONG.]

An Act To authorize a permanent annual appropriation for the maintenance and operation of the Gorgas Memorial Laboratory

Be it enacted, etc., That there is hereby authorized to be permanently appropriated for each year, out of any money in the Treasury not otherwise appropriated, the sum of $50,000, to be paid to the Gorgas Memorial Institute of Tropical and Preventive Medicine, Incorporated (hereinafter referred to as the Gorgas Memorial Institute), for the maintenance and operation by it, of a laboratory to be known as the Gorgas Memorial Laboratory, upon condition (1) that

the necessary building or quarters for said laboratory shall be constructed within the five years next ensuing after this act shall become a law, either upon the site offered by the Republic of Panama therefor, at or adjacent to the city of Panama, or upon a site in the Canal Zone, to be provided by the United States; (2) that each of the Latin American governments be invited and permitted to contribute annually, on a pro rata basis, according to population, toward the maintenance and operation of such laboratory, the total of such contributions not to exceed 75 per cent of the total contributed by the United States; and (3) that, in such manner as the President may determine, the United States be represented permanently on the board or council directing the administration of such laboratory, with privilege to the Latin American governments contributing as aforesaid to have representation on such board or council; all such representation to be based upon, and in proportion to, the actual respective contributions made to the aforesaid maintenance and operation.

SEC. 2. That, pending the construction of the necessary building or quarters for said Gorgas Memorial Laboratory, there is hereby authorized to be appropriated annually, in manner aforesaid, for a period not exceeding the five years hereinbefore named, said sum of $50,000, payable to the Gorgas Memorial Institute, to enable and permit to be made the organization of the said Gorgas Memorial Laboratory, and its maintenance and operation, in temporary quarters or in any existing laboratory, in the Republic of Panama or the Canal Zone.

SEC. 3. The Gorgas Memorial Institute shall make to Congress annually, on the first Monday in December, a full report of the operation and work of the Gorgas Memorial Laboratory up to the first of November next preceding, and shall include therewith a complete statement of the receipts and expenditures of said laboratory for such fiscal year. The books and accounts of the Gorgas Memorial Laboratory shall at all times be open to examination by the Comptroller General of the United States.

Approved, May 7, 1928.

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FIRST APPROPRIATION MADE

Since the Gorgas Memorial Laboratory bill became a law, the Congress of the United States under, and in conformity with, its provisions, has made the first annual appropriation of $50,000 for the purposes set forth in the measure, and the proposed laboratory organization and work will begin July 1, 1928, or soon thereafter.

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